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*Flying Operations*

**EC-130J OPERATIONS PROCEDURES**



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This instruction implements AFD 11-2, *Aircraft Rules and Procedures*. It is applicable to Air National Guard (ANG) units but does not apply to Air Force Reserve Command units. It establishes procedures and minimum Air Force standards for the operation of all EC-130J Commando Solo (CS) aircraft, as well as the EC-130 Super J, EC-130 Super J supported operations, other EC-130J variants and Backup Aircraft Inventory (BAI) C-130Js operated by an EC-130J (CS) flying unit. Any reference to EC-130J in this instruction applies to all EC-130J variants and BAI C-130J aircraft operated by the flying unit, unless a specific variant is identified. It provides policies and procedures for most circumstances, but should not replace sound judgment. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

The Paperwork Reduction Act of 1974 as amended in 1996 and the Air Force Forms Management Program IAW AFI 37-160, Volume 8, The Air Force Publications and Forms Management Program--Developing and Processing Forms, affect this instruction. This instruction contains references to the following field (subordinate level) publications and forms, which until converted to departmental level publications and forms, may be obtained from the respective MAJCOM publication office:

<b>Chapter 1— GENERAL INFORMATION</b>	<b>16</b>
1.1. General. ....	16
1.2. Applicability. ....	16
1.3. Supplements. ....	16
1.4. Requisitioning Procedures. ....	16
1.5. Distribution. ....	16
1.6. Improvement Recommendations. ....	17
1.7. Deviations and Waivers. ....	17

1.8.	Key Words: .....	17
1.9.	Definitions .....	17
1.10.	Aircrew Operational Reports. ....	18
<b>Chapter 2—</b>	<b>COMMAND AND CONTROL</b>	<b>19</b>
2.1.	General .....	19
2.2.	Operational Control (OPCON). ....	19
2.3.	Mission Monitoring. ....	19
2.4.	Mission Commander. ....	20
2.5.	Aircraft Commander (AC) Responsibility and Authority .....	21
2.6.	Designated NCOIC. ....	21
2.7.	Aircrew Responsibilities .....	21
2.8.	Mission Clearance Decision. ....	22
2.9.	C2 Agency Telephone Numbers .....	22
2.10.	Operational C2 Reporting .....	22
2.11.	Posse Comitatus .....	23
<b>Chapter 3—</b>	<b>CREW COMPLEMENT AND MANAGEMENT</b>	<b>25</b>
3.1.	Aircrew Qualification. ....	25
3.2.	Crew Complement. ....	25
Table 3.1.	Crew Complement. ....	26
3.3.	Additional Crewmembers (ACM). ....	26
3.4.	Interfly .....	27
3.5.	Scheduling Restrictions. ....	27
3.6.	Crew Rest. ....	28
3.7.	Flight Duty Period (FDP) and Crew Duty Time (CDT) .....	30
3.8.	Alert Aircrew Procedures: .....	31
<b>Chapter 4—</b>	<b>OPERATING GUIDELINES AND RESTRICTIONS</b>	<b>33</b>
Section 4A	Introduction	33
4.1.	Objective .....	33
4.2.	Policy .....	33
4.3.	Technical Assistance Service. ....	33
4.4.	MEL Supplements. ....	34

Section 4B	Aircrew Operating Guidelines and Restrictions	34
4.5.	Ground Evacuation. ....	34
4.6.	Cross Wind Limitations. ....	34
4.7.	Aircraft Maximum Gross Weight Policy. ....	34
4.8.	Takeoff and Landing Policy. ....	34
4.9.	Copilot Landing Policy. ....	35
4.10.	Senior Staff Officers Policy. ....	35
4.11.	Maximum Effort Procedures ....	35
4.12.	Threat Maneuvers. ....	35
4.13.	Cruise: ....	35
4.14.	Flight Operations at Tactical Altitudes: ....	35
Section 4C	Aircraft Operating Restrictions	36
4.15.	One-Time Flights. ....	36
4.16.	Three-Engine Takeoffs. ....	36
4.17.	Fuel System. ....	36
4.18.	Navigation Systems: ....	37
Section 4D	Aircrew Maintenance Support Guidelines and Restrictions	41
4.19.	General. ....	41
4.20.	Authority to Clear a Red X. ....	41
4.21.	Refueling/Defueling. ....	41
4.22.	Maintenance Identifiers. ....	41
Section 4E	EC-130J Minimum Equipment List (MEL) Tables	42
4.23.	MEL Definitions. ....	42
Table 4.1.	Engines / Auxiliary Power Unit (APU). ....	42
Table 4.2.	Propellers. ....	44
Table 4.3.	Electrical System. ....	44
Table 4.4.	Fuel System. ....	44
Table 4.5.	Hydraulics. ....	46
Table 4.6.	Anti-Ice / De-Ice System. ....	46
Table 4.7.	Brake/Anti Skid Systems. ....	47
Table 4.8.	Flight Recorders/Locating Systems. ....	47

Table 4.9.	Fire Protection/Warning Systems. ....	48
Table 4.10.	Air Conditioning, Pressurization and Bleed Air. ....	48
Table 4.11.	Landing Gear. ....	50
Table 4.12.	Flight Instruments. ....	50
Table 4.13.	Avionics/Navigation Systems. ....	51
Table 4.14.	Autopilot. ....	52
Table 4.15.	Inflight Refueling System. ....	52
Table 4.16.	Aircraft Exterior and Interior Lighting. ....	53
Table 4.17.	Doors and Ramp Systems. ....	53
Table 4.18.	Enhanced Cargo Handling System. ....	54
<b>Chapter 5—</b>	<b>OPERATIONAL PROCEDURES</b>	<b>55</b>
5.1.	Checklists ....	55
5.2.	Duty Station ....	55
5.3.	Flight Station Entry ....	55
5.4.	Flight Deck Congestion and Loose Objects. ....	56
5.5.	Outside Observer ....	56
5.6.	Seat Belts ....	56
5.7.	Crew Bunks. ....	57
5.8.	Aircraft Lighting ....	57
5.9.	Communications Policy ....	57
5.10.	Advisory Calls: ....	59
5.11.	Runway, Taxiway and Airfield Requirements. ....	60
Table 5.1.	Minimum Runway/Taxiway Width Requirements. ....	61
Table 5.2.	RVR/Visibility Correction Factors. ....	61
5.12.	Aircraft Taxi Procedures and Taxi Obstruction Clearance Criteria ....	61
Table 5.3.	RCR Values. ....	62
5.13.	Foreign Object Damage (FOD) Avoidance ....	62
5.14.	Reverse Taxi: ....	62
5.15.	Arresting Cables. ....	62
5.16.	Takeoff and Landing Obstruction Criteria ....	63
Figure 5.1.	Takeoff and Landing Obstruction Clearance. ....	64

Figure 5.2. Ground Operations Obstruction Clearance Criteria. ....	64
5.17. Wind Restrictions and RCR Limitations: .....	65
5.18. Landing Gear and Flap Operating Policy. ....	65
5.19. Intersection Takeoffs. ....	65
5.20. Stop and Go Landings. ....	65
5.21. Traffic Collision Avoidance System (TCAS). ....	65
5.22. Radar Altimeter. ....	65
5.23. GCAS (Ground Collision Avoidance System). ....	65
5.24. Enroute Cruise Policy .....	66
5.25. EC-130J (CS) Trailing Wire Antenna Operations. ....	67
5.26. Fuel Planning. ....	67
5.27. Fuel Jettison Procedures .....	68
5.28. Arrival. ....	68
5.29. Traffic Pattern. ....	69
5.30. Random Approaches: .....	69
5.31. Portable Electronic Devices. ....	69
5.32. Hand-Held GPS. ....	69
5.33. Aircraft Recovery From Unprepared Surfaces. ....	69
5.34. BASH Programs. ....	70
5.35. Functional Check Flights (FCFs) and Acceptance Check Flights (ACFs) .....	70
5.36. Participation in Aerial Events. ....	70
5.37. Smoking Restrictions. ....	70
5.38. Transportation of Pets .....	70
5.39. Alcoholic Beverages .....	70
5.40. Engine Running Crew Changes (ERCC). ....	70
5.41. Engine Running Onload and Offload (ERO). ....	71
5.42. Alert Aircraft. ....	72

## **Chapter 6— AIRCREW PROCEDURES 74**

Section 6A Pre-Mission .....	74
6.1. Aircrew Uniform. ....	74
6.2. Personal Requirements and Professional Equipment. ....	74
6.3. Aircraft Tool Kits. ....	75

6.4.	Aircraft NVG Kits. ....	75
6.5.	Aircrew Publications Requirements. ....	75
Table 6.1.	Aircrew Publications. ....	76
6.6.	Aircraft Mission Kits ....	76
Table 6.2.	Aircraft Mission Kit. ....	77
6.7.	Pre-mission Actions ....	78
6.8.	Airfield Certification. ....	79
6.9.	Deployment Intelligence Briefing ....	80
6.10.	Pre-Deployment Briefing. ....	80
Section 6B	Predeparture	80
6.11.	Flight Crew Information File (FCIF). ....	80
6.12.	Flight Crew Read Files. ....	80
6.13.	Mission Folders. ....	80
6.14.	Airfield Security ....	80
6.15.	Sensitive Mission Operations. ....	80
6.16.	SAFE PASSAGE Procedures ....	81
6.17.	Briefing Requirements ....	81
6.18.	Call Signs ....	82
6.19.	Instrument Flight Rules ....	83
6.20.	Flight Data Verification ....	83
6.21.	Departure Planning: ....	83
6.22.	Obstacle Clearance Planning: ....	84
Figure 6.1.	Obstacle Identification Surface. ....	85
6.23.	Alternate Planning ....	86
6.24.	Weather Minimums For Takeoff. ....	87
Table 6.3.	Weather Minimums For Takeoff. ....	87
6.25.	Departure Alternates. ....	87
6.26.	Destination Requirements ....	87
6.27.	Adverse Weather. ....	88
6.28.	Route Navigation Kits: ....	90
Table 6.4.	NAVIGATION KITS. ....	90
6.29.	Authenticators and Classified Documents. ....	91

Section 6C	Preflight	91
6.30.	AFTO Form 781, ARMS Aircrew/Mission Flight Data Document .....	91
6.31.	Aircraft Servicing and Ground Operations .....	91
6.32.	Aircrew Dash One Preflight .....	93
6.33.	Life Support Equipment Documentation. ....	93
6.34.	Life Support Requirements. ....	93
6.35.	Fleet Service. ....	95
6.36.	Cargo Documentation: .....	95
6.37.	Procedures for Airlifting Hazardous Cargo .....	95
6.38.	Handling of Classified Cargo, Registered Mail, NMCS/VVIP/FSS Shipments, and Courier Material .....	99
6.39.	Passenger Policy .....	100
6.40.	Narcotics. ....	102
6.41.	Military Customs Pre-clearance Inspection Program: .....	102
6.42.	Identification Friend or Foe/Selective Identification Feature (IFF/SIF) Operations. ....	102
Table 6.5.	Worldwide IFF Chart. ....	103
Section 6D	Departure	104
6.43.	TOLD Data. ....	104
6.44.	Departure Briefing. ....	104
6.45.	On-Time Takeoffs. ....	104
6.46.	Departure Monitoring. ....	105
Section 6E	Enroute	105
6.47.	Oxygen Requirements. ....	105
6.48.	Flight Progress .....	105
6.49.	“Due Regard” Procedures. ....	106
6.50.	Inflight Meals. ....	107
6.51.	Communications .....	107
6.52.	Inflight Emergency Procedures .....	107
6.53.	Need for Medical Assistance .....	108
6.54.	Continuing Flight with an Engine Loss. ....	108
6.55.	Weather Forecasts .....	108
6.56.	Low Altitude Overwater Operations. ....	109

Section 6F	Arrival	109
6.57.	Crew Coordination. ....	109
6.58.	Descent and Approach ....	109
6.59.	Instrument Approach Procedures. ....	110
6.60.	Wake Turbulence Avoidance. ....	112
Section 6G	Post-flight	112
6.61.	Engine Shutdown: ....	112
6.62.	Classified Equipment and Material ....	113
6.63.	Impoundment of Aircraft. ....	113
Section 6H	Debriefing	113
6.64.	Maintenance. ....	113
6.65.	Weather. ....	114
6.66.	Intelligence. ....	114
6.67.	Crew Debriefing. ....	114
6.68.	Aircrew Notification Procedures. ....	114
Section 6I	Miscellaneous	114
6.69.	Border Clearance and Inspections: ....	114
6.70.	Insect and Pest Control ....	118
6.71.	Hazardous Medical Equipment: ....	119
6.72.	Hazardous Material Procedures. ....	120
6.73.	Dropped Object Prevention ....	121
6.74.	Cockpit Voice Recorder (CVR) ....	122
6.75.	Airfield Data Reports ....	122
6.76.	Ordnance Procedures. ....	122
<b>Chapter 7—</b>	<b>AIRCRAFT SECURITY</b>	<b>123</b>
7.1.	General. ....	123
7.2.	Security ....	123
7.3.	Air Force Physical Security Program ....	123
7.4.	Enroute Security. ....	123
7.5.	Detecting Unauthorized Entry ....	124
7.6.	Preventing and Resisting Hijacking ....	125

7.7.	Preventive Measures .....	126
7.8.	Initial Response .....	126
7.9.	Inflight Resistance .....	127
7.10.	Communications Between Aircrew and Ground Agencies .....	127
7.11.	Forced Penetration of Unfriendly Airspace .....	128
7.12.	Arming of Crewmembers. ....	128
7.13.	Force Protection. ....	129
7.14.	PHOENIX RAVEN Security Team (RST). ....	131
<b>Chapter 8—</b>	<b>OPERATIONAL REPORTS AND FORMS</b>	<b>133</b>
8.1.	General. ....	133
8.2.	AF Form 457, USAF Hazard Report. ....	133
8.3.	AF Form 651, Hazardous Air Traffic Report (HATR). ....	133
8.4.	AF Form 711b, Aircraft Flight Mishap Report . ....	134
8.5.	Reports of Violations/Unusual Events or Circumstances. ....	135
8.6.	Petroleum, Oil, and Lubricants (POL) - Aviation Fuels Documentation. ....	136
8.7.	AF Form 15, United States Air Force Invoice. ....	137
8.8.	AMC Form 54, Aircraft Commander's Report on Services/Facilities. ....	137
8.9.	AMC Form 43, ....	137
<b>Chapter 9—</b>	<b>FLYING TRAINING POLICY</b>	<b>138</b>
9.1.	General. ....	138
9.2.	Crew Complement and Scheduling. ....	138
9.3.	Instructor or Flight Examiner Briefings. ....	138
9.4.	Debriefing. ....	138
9.5.	Maximum Aircraft Weight for Training. ....	138
9.6.	Air Refueling Training Restrictions .....	138
9.7.	Special Maneuvers. ....	139
9.8.	Simulated Emergency Flight Operations. ....	139
9.9.	Simulated Engine Failure Training. ....	140
9.10.	Touch-and-Go and Stop-and-Go Landings: .....	141
9.11.	Simulated Instrument Flight. ....	142
9.12.	Tactics Training Flight Restrictions: .....	142

Figure 9.1. Training Maneuver Restrictions. ....	143
<b>Chapter 10— LOCAL OPERATING PROCEDURES</b>	<b>145</b>
10.1. General. ....	145
<b>Chapter 11— FLIGHT SYSTEM OFFICER PROCEDURES</b>	<b>146</b>
Section 11A General Procedures	146
11.1. General Flight Systems Officer (FSO) Procedures. ....	146
Section 11B Flight Planning Procedures	147
11.2. General Flight Planning. ....	147
11.3. Computer Flight Planning. ....	147
11.4. AF Form 4138 Manual Flight Planning. ....	148
Section 11C Equal Time Point Procedures	149
11.5. ETP Computations. ....	149
Table 11.1. ETP Options. ....	150
Section 11D Charts	152
11.6. Flight Chart Requirements. ....	152
Section 11E Inflight Navigation Procedures	153
11.7. Enroute Flight Progress Procedures: ....	153
11.8. Calibration Procedures. ....	154
11.9. AF Form 4138 Inflight Navigation Log: ....	155
11.10. Airborne Directed Approach (ADA) Procedures. ....	158
Figure 11.1. CFPS Flight Plan (No Inflight Refueling). ....	159
Figure 11.2. AF Form 4138 Manual Flight Plan (No Inflight Refueling). ....	160
Figure 11.3. AF Form 4138 Navigation Log (Standard Procedures) ....	161
Figure 11.4. AF Form 4138 Navigation Log (Degraded Procedures) ....	161
<b>Chapter 12— FUEL PLANNING AND INFLIGHT MANAGEMENT</b>	<b>162</b>
Section 12A General Fuel Planning Procedures	162
12.1. General. ....	162
12.2. Alternate and Inflight Refueling Abort Fuel Planning. ....	163
12.3. Fuel Conservation ....	163

Section 12B	Fuel Planning Procedures	164
12.4.	Computer Flight Planned Fuel Analysis. ....	164
12.5.	Manual Fuel Planning. ....	164
12.6.	AF Form 4138 Fuel Analysis: ....	165
Section 12C	Fuel Planning for Inflight Refueling	166
12.7.	Fuel Planning for A Single Inflight Refueling ....	166
Table 12.1.	AF Form 4138 and 4139 Fuel Load Components. ....	167
12.8.	Fuel Planning for Two Inflight Refuelings: ....	169
Section 12D	Inflight Fuel Management Procedures	171
12.9.	General Inflight Fuel Management Procedures. ....	171
12.10.	Inflight Fuel Management Procedures. ....	173
Figure 12.1.	CFPS Flight and Fuel Plan (No Inflight Refueling). ....	176
Figure 12.2.	AF Form 4138 Manual Flight and Fuel Plan (No Inflight Refueling). ....	177
Figure 12.3.	AF Form 4138 Manual Fuel Planning (No Inflight Refueling). ....	178
Figure 12.4.	CFPS Flight and Fuel Plan (Single Inflight Refueling). ....	179
Figure 12.5.	AF Form 4138 Manual Flight and Fuel Plan (Single Inflight Refueling). ....	181
Figure 12.6.	AF Form 4139 Fuel Plan (Single Inflight Refueling). ....	182
Figure 12.7.	AF Form 4138 Excess Fuel Calculation (Single Inflight Refueling). ....	182
Figure 12.8.	AF Form 4138 Inflight Fuel Management. ....	183
Figure 12.9.	AF Form 4139 Fuel Plan (Double Inflight Refueling). ....	183
<b>Chapter 13—</b>	<b>LOADMASTER PROCEDURES AND FORMS</b>	<b>184</b>
Section 13A	Introduction	184
13.1.	General. ....	184
Section 13B	Aircraft Loadmaster Responsibilities	184
13.2.	Preflight Duties: ....	184
13.3.	EC-130J Specific Duties: ....	185
13.4.	Weight and Balance. ....	185
13.5.	Fuel Weight Computation. ....	185
13.6.	Cargo/Baggage Airlift. ....	185
13.7.	Border Clearance. ....	186

13.8.	Operational Forms for Loadmasters. ....	186
Section 13C	Cargo Procedures. ....	186
13.9.	Responsibilities of Aircraft Cargo Loading. ....	186
13.10.	Emergency Exits and Safety Aisles. ....	187
13.11.	Air Cargo Restraint Criteria. ....	187
Section 13D	Passenger Procedures. ....	188
13.12.	Passenger Missions. ....	188
13.13.	Passenger Procedures and Handling ....	188
13.14.	Troop Movements. ....	189
13.15.	Emergency Airlift of Personnel. ....	190
13.16.	Passenger Weapons Handling. ....	190
Figure 13.1.	Format for Validation of Cargo Loading Procedures. ....	191
<b>Chapter 14—</b>	<b>MISSION SYSTEMS OFFICER PROCEDURES</b>	<b>192</b>
14.1.	General ....	192
14.2.	Mission Planning ....	192
14.3.	Inflight Responsibilities ....	192
14.4.	Tactical Responsibilities ....	192
14.5.	Communication Procedures ....	193
<b>Chapter 15—</b>	<b>ELECTRONIC COMMUNICATIONS SYSTEMS OPERATOR/TECHNICIAN PROCEDURES</b>	<b>194</b>
15.1.	General. ....	194
15.2.	Situational Awareness and Orientation. ....	194
15.3.	Control of Classified Information and Materials. ....	194
15.4.	Mission Planning. ....	194
15.5.	Preflight. ....	194
15.6.	Inflight. ....	194
15.7.	Monitoring Mission Systems Interphone. ....	194
15.8.	Post Mission. ....	195
<b>Chapter 16—</b>	<b>COMBAT MISSION PLANNING</b>	<b>196</b>
Section 16A	General Information	196

16.1.	General. ....	196
16.2.	Mission. ....	196
16.3.	Communications and Operations Security (COMSEC and OPSEC). ....	196
16.4.	Execution Checklist. ....	196
16.5.	Crew Rest. ....	196
Section 16B	Mission and Employment Planning	197
16.6.	Mission Feasibility. ....	197
16.7.	Mission Planning: ....	197
16.8.	Threat Analysis and Degradation. ....	197
16.9.	Route Selection. ....	199
16.10.	Altitude and Airspeed. ....	200
16.11.	Fuel Planning. ....	201
16.12.	Air Refueling. ....	201
16.13.	Due Regard Operations. ....	201
16.14.	Communications. ....	201
Section 16C	Mission Orbit Planning	202
16.15.	General. ....	202
16.16.	Mission Planning. ....	202
16.17.	Altitude and Airspeed. ....	202
16.18.	Fuel Planning. ....	202
16.19.	Air Refueling. ....	202
16.20.	Chart Preparation. ....	203
Section 16D	Ingress/Egress Planning	203
16.21.	General. ....	203
16.22.	Mission Planning. ....	203
16.23.	Altitude and Airspeed. ....	203
16.24.	Time Control Procedures. ....	203
16.25.	Fuel Planning. ....	204
16.26.	Air Refueling. ....	204
16.27.	Chart Preparation. ....	204
Section 16E	Emergency Egress Planning	204

16.28.	Mission Preparation. ....	204
16.29.	Route Selection. ....	205
16.30.	Altitude. ....	205
16.31.	Airspeed. ....	205
16.32.	Fuel Planning. ....	205
16.33.	Chart Preparation. ....	205
Section 16F	Chart Preparation	206
16.34.	General Information. ....	206
Table 16.1.	Radius of Turn for 20 Degrees of Bank. ....	207
Table 16.2.	Radius of Turn for 30 Degrees of Bank. ....	207
16.35.	Annotations and Symbols. ....	207
Table 16.3.	EC-130J Chart Preparation Guide. ....	209
16.36.	Special Chart Requirements for Tactics Training Flights: ....	209
<b>Chapter 17—</b>	<b>EC-130J EMPLOYMENT</b>	<b>211</b>
17.1.	Emergency Egress Procedures ....	211
17.2.	Tactical Arrivals. ....	211
Figure 17.1.	Low Altitude Approaches. ....	214
Figure 17.2.	High Altitude Approaches. ....	215
17.3.	Tactical Departures. ....	216
17.4.	Crew Duties. ....	216
<b>Chapter 18—</b>	<b>SPECIAL OPERATIONS AIR REFUELING</b>	<b>217</b>
18.1.	General. ....	217
18.2.	Policy. ....	217
18.3.	Altitude Reservations (ALTRV). ....	217
18.4.	Planning Factors. ....	219
Table 18.1.	Special Operations Enroute Rendezvous Track. ....	219
18.5.	Special Operations Procedures: ....	219
18.6.	NVG Inflight Refueling Operations and Limitations. ....	222
18.7.	Breakaway Procedures: ....	222

<b>Chapter 19— NIGHT VISION GOGGLES (NVG) OPERATIONS</b>	<b>223</b>
19.1. General. ....	223
19.2. Mission. ....	223
19.3. Training/Operations. ....	223
19.4. Mission Planning. ....	223
19.5. NVG Lighting and Required Equipment. ....	223
19.6. NVG Limitations. ....	224
19.7. NVG Enroute Procedures. ....	224
19.8. NVG Emergency Procedures. ....	224
19.9. Forms Adopted. ....	224
19.10. Forms Prescribed. ....	225
<b>Attachment 1— GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION</b>	<b>226</b>

## Chapter 1

### GENERAL INFORMATION

#### 1.1. General.

1.1.1. This AFI provides guidelines for EC-130J Commando Solo (CS) and Super J (SJ) operations and applies to aircrews and all management levels concerned with operation of the EC-130J. It is a compilation of information from aircraft flight manuals; FLIP publications, and other Air Force directives, as well as an original source document for many areas. It is written for normal and contingency operations to reduce procedural changes at the onset of contingencies.

1.1.2. Basic source directives have precedence in the case of any conflicts, revisions, and matters of interpretation. For those areas where this AFI is the source document, waiver authority will be in accordance with paragraph 1.7.3. For those areas where this AFI repeats information contained in other source documents, waiver authority will be in accordance with these source documents.

1.1.3. HQ AFSOC Standardization/Evaluation (HQ AFSOC/DOV) has overall responsibility for the administration of this instruction.

1.1.4. The Air National Guard (ANG) is considered a MAJCOM for the purpose of this AFI.

1.1.5. Training procedures are included in this AFI.

#### 1.2. Applicability.

1.2.1. This AFI is applicable to all individuals/units operating EC-130J (CS) aircraft, as well as other EC-130J variants, and Backup Aircraft Inventory (BAI) C-130Js operated by the flying unit.

1.2.2. This AFI will be used by all agencies involved in or supporting EC-130J Commando Solo operations. Copies will be current and available to planning staffs from headquarters to aircrew level.

**1.3. Supplements.** This document is a basic directive. MAJCOM may supplement this AFI according to AFPD 11-2, *Aircraft Rules and Procedures*. Units may publish local procedures as a supplement to this instruction. Supplements and local procedures will not duplicate or be less restrictive than the provisions of this basic document. Limit supplement information to unique requirements only.

1.3.1. Coordination Process. Forward MAJCOM supplements (with attached Air Force Form 673) to HQ AFSOC/DOV, HQ AFFSA/XOF, and ANG/XO for approval before publication.

1.3.2. Following approval, send final copies to USAF/XO, HQ AFFSA/XOF, HQ AFSOC/DOV, and the ANG/XO.

1.3.3. File supplements according to AFI 33-360V1, *Publications Management Program*.

**1.4. Requisitioning Procedures.** Order this AFI through the servicing publications distribution office (PDO). Unit commanders provide copies for all aircrew members and associated support personnel. This publication is available digitally on the SAF/AAD WWW site at <http://afpubs.hq.af.mil>. Contact your Publishing Distribution Office (PDO) for the monthly CD-ROM or access to the bulletin board system.

**1.5. Distribution.** This instruction is published as one complete document and distributed as such. Unit commanders will assure distribution of this instruction to all crewmembers.

**1.6. Improvement Recommendations.** Send comments and suggested improvements to this instruction on AF Form 847, **Recommendation for Change of Publication**, through channels to HQ AFSOC /DOV according to AFI 11-215, *Flight Manual Procedures and MAJCOM Supplement*.

**1.7. Deviations and Waivers.** Do not deviate from the policies and guidance in this AFI under normal circumstances, except:

1.7.1. For safety.

1.7.2. When it is necessary to protect the crew or aircraft from a situation not covered by this AFI and immediate action is required, the AC has ultimate authority and responsibility for the course of action to be taken. Report deviations, without waiver, through channels to the parent MAJCOM Stan/Eval function within 48 hours, followed by a written report, if requested.

1.7.3. Unless otherwise indicated, HQ AFSOC/DO (lead-command) is the waiver authority for operational procedure requirements contained in this AFI. HQ AFSOC/DO may delegate this authority to COMAFSOF for operationally assigned forces. Request waivers through command and control channels.

**EXCEPTION:** Waiver authority for contingency missions will be listed in the operations order (OPORD), Tasking Order, etc., or designated by the COMAFSOF (or equivalent) for the agency with C2 of the aircraft. Crewmembers may request additional information or confirmation from their home unit, Joint Special Operations Task Force (JSOTF), or MAJCOM/DO.

**1.8. Key Words:** See [Attachment 1](#), *Glossary of References and Supporting Information; Abbreviations and Acronyms; and Terms and Definitions*, of this volume for additional terms.

1.8.1. "Will" and "shall" indicate a mandatory requirement.

1.8.2. "Should" is normally used to indicate a preferred, but not mandatory, method of accomplishment.

1.8.3. "May" indicates an acceptable or suggested means of accomplishment.

1.8.4. "Warning" indicates operating procedures, techniques, etc., which could result in personal injury or loss of life if not carefully followed.

1.8.5. "Caution" indicates operating procedures, techniques, etc., which could result in damage to equipment if not carefully followed.

1.8.6. "Note" indicates operating procedures, techniques, etc., that are considered essential to emphasize.

1.8.7. "Exception" indicates less restrictive limitations to stated guidance. Normally given only for specific circumstances or situations.

**1.9. Definitions .** The explanation or definition of terms and abbreviations commonly used in the aviation community can be found in FAR Part 1; DoD FLIP General Planning, Chapter 2; and Joint Pub 1-02, The DoD Dictionary of Military and Associated Terms. See [Attachment 1](#) for common terms used throughout this instruction.

**1.10. Aircrew Operational Reports.** The reporting requirements in this instruction are exempt from licensing in accordance with paragraph 2.11.10 of AFI 37-124, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections*.

## Chapter 2

### COMMAND AND CONTROL

**2.1. General .** The AFSOC command and control (C2) system is based on the principles of centralized monitoring and decentralized control and execution. The result is a C2 mechanism, which keeps the AFSOC Commander informed of the current status of AFSOC forces while enabling the wing or group commander to exercise control over day to day operations.

**2.2. Operational Control (OPCON).** AFSOC is designated as the controlling agency for USSOCOM assigned Air Force aircraft, while theater special operations commands (SOC) have OPCON of theater-based assets. In practice, responsibility for planning and executing AFSOC missions is routinely delegated to the wing or group commander. The wing or group commander, in turn, exercises control of non-close-hold missions through the command post supporting the wing. In the event that assigned forces undergo a change in operational control (CHOP), responsibility for mission monitoring passes from the wing or group C2 facility to the gaining command. Changeover will be accomplished IAW the pertinent OPLAN, OPORD, or deployment or execution order.

**NOTE:** For certain close-hold activities, security considerations may compel the wing or group commander to shift mission monitoring responsibilities from the command post to another wing agency. The wing or group commander will ensure procedures are established for the responsible agency to monitor mission progress and advise the HQ AFSOC/DO and AFSOC/CC as appropriate.

**2.3. Mission Monitoring.** Except for selected close-hold missions, the AFSOC Command Center monitors all AFSOC aircraft to, from, or between off-station locations. The Command Center tracks off-station aircraft via the AMC command and control system and direct reporting from aircrew and command post personnel. Key components of the AMC C2 system are the Airlift Implementation and Monitoring System (AIMS), the Global Decision Support System (GDSS), and the various AMC C2 facilities at theater and wing locations. Information on scheduled activity comes from the wing/group, which inputs AIMS data for all upcoming missions except local missions not scheduled to land outside the local flying area or close-hold missions that cannot be accommodated by classified “J-coded” AIMS setups. When aircraft are deployed in support of operations and exercises, the Command Center obtains additional information from situation reports (SITREP) and Deployed Status Reports (DSR). The following mission monitoring procedures primarily apply to missions that are not close-hold in nature and have not been chopped to another command:

2.3.1. Aircraft Commanders are responsible to contact the AFSOC Command Center (ANG Air Operations Center, for ANG assigned units) to pass the appropriate information to be input into GDSS to track continental United States (CONUS) aircraft movements. These actions keep both the AFSOC and ANG Commander informed of the status and location of CONUS forces.

2.3.2. Data on CONUS movements of theater-based aircraft are collected by the Command Center via GDSS updates. These are based on information received from AMC Command Posts and direct reporting from aircrews that take off or land at non-AMC locations. The Command Center updates the GDSS database to keep the overseas wings and AFSOC Commander informed of the progress of these missions.

2.3.3. Information on outside CONUS (OCONUS) movements of AFSOC aircraft (CONUS or theater-based) comes to the AFSOC Command Center via GDSS or telephonic notification from the overseas host wing command posts. The host wing command posts receive their data from the aircrews directly or via the Special Operations Command and Control Squadron or Element (SOCCS or SOCCE).

2.3.4. The following paragraphs summarize mission commander, or if none is assigned, aircraft commander duties with regard to flight reporting:

2.3.4.1. Unclassified Missions at Bases with an AMC C2 Facility. Mission commanders will ensure that at least 30 minutes prior to landing the following information is relayed to the AMC C2 facility: Call signs, mission numbers, ETAs, maintenance status, and additional service requirements. After landing, the mission commander will contact the C2 facility with ground handling requirements and departure information. In addition, CONUS based crews operating within the CONUS must keep their home station command posts apprised of all actual takeoff and landing times, projected takeoff times, and other related information.

2.3.4.2. Unclassified Missions at Bases without an AMC C2 Facility. Mission commanders will report, as soon as possible, actual takeoff and landing times, maintenance status, projected takeoff times, and other pertinent data to the host wing command post, SOCS, or AFSOC Command Center. Methods of communicating this information include high frequency (HF) phone patch, Defense Switching Network (DSN), and commercial telephone. As mentioned above, CONUS based crews operating within the CONUS must also ensure that their home station command posts receive real-time reports on aircraft movements.

2.3.4.3. J-coded AIMS Missions. When operating on J-coded missions, the mission commander will pass movement reports to the appropriate C2 facility. If necessary, the mission commander can call on an unclassified line and report. For example, "Loaded and ready to go at J-code 206. ETD is 1400Z."

**NOTE:** For missions command and control requiring special handling above and beyond basic J-code procedures, procedures will be outlined in the tasking directive.

2.3.4.4. Close-hold or Sensitive Missions. These missions may operate without AIMS setups. (See "NOTE" in paragraph 2.3.4.3.).

2.3.5. Regional Reporting Agencies. CONUS and outside normal operating theater: AFSOC Command Center, Hurlburt Fld, FL. DSN: 579-2171, Commercial: 800-451-7705 or 850-581-2966. Other sources would be the ANG Operations Center at DSN 858-6001 / comm: 800-443-2985, 301-981-6001. During unit training assemblies the 193 SOW command post may be contacted at DSN 423-2249 / 2250 or comm: 717-948-2249 / 2250.

**2.4. Mission Commander.** A mission commander will be designated when more than one aircraft or crew is deployed away from home station for training, exercises, or other operations. The mission commander should be a field grade officer. The mission commander or air mission commander will not be a primary crewmember, except for ferry flights for deployment or redeployment (i.e. perform Flight Systems Officer crew duties and mission commander crew duties on the sortie). Mission commander duties include, but are not limited to:

2.4.1. Briefing crews on local operating procedures.

- 2.4.2. Coordinating with ATC, CCT, STS, range control, users, and others that may have an impact on the mission.
- 2.4.3. Ensuring personnel have ample and adequate billeting, dining, and transportation arrangements.
- 2.4.4. Ensuring aircrew members are provided sufficient time for crew-rest.
- 2.4.5. Ensuring maintenance personnel know of aircraft and fuel requirements.
- 2.4.6. Submitting timely reports on aircraft movements (see paragraph 2.3.4.).
- 2.4.7. When away from home station, ANG Mission Commanders will report mission and aircraft status to the ANG Air Operations Center via telephone at the end of each flying day (Ref ANGI 10-207, *Global Flight Following*). Calls to the SOF can be made when the aircraft commander feels it is warranted, i.e., maintenance problems, waiver requests, and itinerary changes. During deployments, ANG Mission Commanders will provide the ANG Air Operations Center times for all flight activity at each landing when possible. The ANG Air Operations Center will update the GDSS database to reflect all times provided by the mission commander. During contingency operations, GDSS reporting is normally accomplished through the Joint Special Operations Task Force (JSOTF).

**2.5. Aircraft Commander (AC) Responsibility and Authority .** The flight authorization will designate an AC for all flights, in accordance with AFI 11-401, *Aviation Management*, and applicable MAJCOM supplement. ACs are:

- 2.5.1. In command of all persons aboard the aircraft. The highest qualified Aircraft Commander is normally designated the “A” code on the flight authorization orders. Refer to AFI 11-401, *Aviation Management*, MAJCOM Supplement for guidance.
- 2.5.2. Responsible for the welfare of the crew and the safe accomplishment of the mission.
- 2.5.3. Vested with the authority necessary to manage crew resources and accomplish the mission.
- 2.5.4. The final mission approval authority and will make decisions not specifically assigned to higher authority.
- 2.5.5. The final authority for requesting or accepting any waivers affecting the crew or mission.
- 2.5.6. Charged with keeping the applicable C2 or executing agencies informed concerning mission progress.
- 2.5.7. Responsible for the timely reporting of aircraft movements in the absence of a mission commander (see paragraph 2.3.4.)

**2.6. Designated NCOIC.** The highest-ranking enlisted aircrew member is normally the designated the NCOIC on the flight orders. Duties commence when the aircrew reports for duty.

**2.7. Aircrew Responsibilities .** The AC is the focal point for interaction between aircrew and mission support personnel. The local C2 agency is the focal point for all mission support activities. ACs must inform C2 of any factor that may affect mission accomplishment. When transiting a stop without a C2 agency, it is the responsibility of the AC to ensure necessary mission information is placed into the C2 system by the most expeditious means available. The AC will establish a point of contact with the appropriate C2 agency prior to entering crew rest.

**2.8. Mission Clearance Decision.** The final decision to delay a mission may be made either by, the agency with OPCON, unit commander, mission commander, or the aircraft commander when conditions are not safe to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the aircraft commander. If the aircraft commander refuses a mission for safety reasons, the mission will not depart until the conditions have been corrected or improved so that the mission can operate safely. Another aircraft commander and aircrew will not be asked to take the same mission under the same conditions.

2.8.1. Diverting or re-routing a mission must be authorized by the commander with OPCON, except in an emergency or when required by enroute or terminal weather conditions or facilities. In the event of an emergency or weather related divert or reroute, the mission or aircraft commander must notify the controlling authority as soon as possible

2.8.1.1. The controlling agency directing the rerouting or diversion is responsible for ensuring the aircraft is compatible with departure, enroute, and destination requirement and facilities.

2.8.1.2. The aircraft commander will notify the controlling agency of any aircraft or aircrew limitation that may preclude diverting or rerouting the mission.

2.8.2. When directing an aircraft to an alternate airfield, the controlling agency will ensure the aircraft commander is provided existing and forecast weather for the alternate, NOTAMs, and appropriate airfield information from the Airfield Suitability and Restrictions Report (ASRR). If the planned alternate becomes unsuitable while en route, the controlling agency will advise the aircraft commander of other suitable alternates.

2.8.3. The controlling agency will coordinate with customs and ground service agencies to prepare for arrival. The aircraft commander is final authority on selecting a suitable alternate.

**2.9. C2 Agency Telephone Numbers .** Units should publish a comprehensive list of telephone numbers to assist crews in coordinating mission requirements through appropriate C2 agencies. It should be made readily available to crews, and posted in the Read Files, and other appropriate publications.

**2.10. Operational C2 Reporting .** Aircrews on AFSOC-controlled missions are responsible for transmitting these messages via SATCOM, HF, DSN, etc., when transiting stations without an AFSOC (fixed or mobile) presence. Crews on missions not controlled by AFSOC will report to the appropriate controlling agency. ANG units will normally report through the Air National Guard Readiness Center (ANGRC) for all missions other than those directed by AFSOC.

2.10.1. High Frequency (HF) Communications. In flight, HF is the primary means of worldwide C2 communications.

2.10.2. UHF SATCOM. UHF SATCOM supplements HF communications by providing a worldwide communications capability suitable for *classified* C2 transmissions.

2.10.3. Stations Without C2 Agencies. Report movement information (actual time of departure [ATD], estimated time of departure [ETD], actual time of arrival [ATA], directly to the controlling C2 agency (as appropriate) as soon as possible, by any means available. After takeoff, relay pertinent data to the appropriate C2 agency by any means available.

2.10.3.1. For local training missions, request clearance to Block out.

2.10.3.2. The departure message should include the aircraft call sign, actual time of departure (ATD), and other applicable information.

2.10.3.3. The arrival message should contain actual time of arrival (ATA) and any other information the aircrew deems necessary to pass to C2 agencies. Other information may include but should not be limited to crew rest, maintenance status, refueling, mission complete, etc.

2.10.4. Report movement information (departure, arrival, or diversion) and to the appropriate C2 agencies via discreet or global high frequency (HF) stations or SATCOM. Provide relay instructions for global HF stations to pass reports to appropriate agencies.

**NOTE:** All HF transmissions will be restricted to operational traffic, i.e. movement reporting, itinerary revisions, maintenance status, etc.

2.10.5. Enroute Reporting. Full time connectivity between C-130Js and the appropriate controlling agency is desired. Adhere to the following procedures:

2.10.5.1. CONUS. C2 agencies may advise aircrews via the controlling ATC agency to establish contact with C2 agencies when communication is needed. Refer to the flight information publication (FLIP) concerning global HF station procedures in contacting MAINSAIL. Periodic "ops normal" calls or continuous monitoring of discreet or global HF or UHF SATCOM are not normally required.

2.10.5.2. OCONUS. The controlling agency may specify increased reporting procedures (if needed) through a communications plan in the OPLAN, OPORD, FRAG, or Mission Directive. Aircrews will transmit messages or relay calls through discreet or global HF or UHF SATCOM for relay to the controlling C2 agency as specified in the communications plan. Maintain listening watch on discreet or US Global HF or UHF SATCOM as specified in the communications plan.

2.10.6. Aircrews transmit a UHF or VHF arrival advisory as soon as contact can be established with the destination C2 agency. The following information should be furnished:

2.10.6.1. Aircraft call sign.

2.10.6.2. Mission number.

2.10.6.3. ETA.

2.10.6.4. Maintenance status.

2.10.6.5. DV codes and requirements.

2.10.6.6. Passenger and Cargo status.

2.10.6.7. Hazardous cargo and remote parking requirements.

2.10.6.8. Additional support and services required.

2.10.6.9. Fuel Requirements.

2.10.7. DV Messages. Airborne unclassified messages originated by DV passengers may be transmitted at the discretion of the AC.

**2.11. Posse Comitatus** . It is the policy of the Department of Defense to cooperate with civilian law enforcement officials to the maximum extent practicable. AFI 10-101 incorporates the appropriate directive and provides uniform policies and procedures to be followed concerning support provided to federal,

state, and local civilian law enforcement agencies. It establishes specific limitations and restrictions on the use of Air Force personnel, equipment, facilities, and services by civilian law enforcement organizations. Report all requests for assistance and coordinate all requests from civilian law enforcement authorities through the appropriate C2 channels.

## Chapter 3

### CREW COMPLEMENT AND MANAGEMENT

**3.1. Aircrew Qualification.** Primary crew members, or those occupying a primary position during flight, must be qualified, or in training for qualification, in that crew position. If non-current, or in training for a particular event, the crewmember must be under the supervision of an instructor while accomplishing that event (direct supervision for critical phases of flight).

3.1.1. Basic aircraft qualification (F coded) crewmembers (i.e. FP, FN, and FL) may perform primary crew duties on any non-contingency sortie (including unilateral training, joint training and exercises) when receiving mission qualification training or evaluations, and only while under the supervision of a qualified instructor or flight examiner in their respective crew position.

3.1.2. Basic mission capable (M coded) crewmembers (i.e. MP, MN, and ML) may perform primary crew duties on any unilateral training mission. For other missions, the unit commander must determine the readiness of each basic mission capable crewmember to perform primary crew duties for specific mission tasking.

3.1.3. Non-current or unqualified (U coded) pilots (i.e. UP) may perform crew duties only on designated training or evaluation missions under the supervision of a qualified instructor or flight examiner pilot. Both pilots must be fully qualified unless excepted by AFI 11-401.

3.1.4. Other Non-current or U-coded crewmembers (i.e. UN, UL, UE, and UK) may perform duties in their primary crew position on any sortie when under direct supervision of a qualified instructor or flight examiner in their respective crew position. In this case, the student crewmember and the instructor or flight examiner fulfills the requirement for one primary position as specified in [Table 3.1](#).

3.1.5. Senior staff members (pilots only) or O-coded pilots (i.e. OP) who have completed a Senior Staff Familiarization course will occupy the left pilot seat only and be under direct IP supervision. These individuals will log "OP" for Flight Authorization Duty Code on the AFTO Form 781, **ARMS Aircrew/Mission Flight Data Document**. Refer to paragraph [4.10](#) for additional restrictions.

### 3.2. Crew Complement.

3.2.1. Minimum crew complement will be as specified in the flight manual and [Table 3.1](#). The Operations Group commander, or COMAFSOF, is the waiver authority for all other crew positions above the minimum specified by the flight manual.

3.2.2. Augmented crews are required when a mission cannot be safely completed within a basic FDP. Augmentees must be current and qualified in the aircraft and mission ready in accordance with AFI 11-2EC-130J, Volume 1. In those situations requiring augmentation, the crew must be augmented from the start of the duty period. MAJCOM / DO approval is required for additional crewmembers to join the mission enroute for augmentation. If augmentees are added to the crew, the crew's FDP will be computed based on the FDP of the most limited person.

**Table 3.1. Crew Complement.**

Crew Position	Basic	Augmented	Mission	Augmented Mission
AC	1	2 (1)	1	2 (1)
Copilot	1	1	1	2
FSO	1	2	1	2
Loadmaster	1/2 (2)	1/2 (3)	1	1/2 (3)
MSO			1	2 (5)
ECS			5	7 (4) (5)

**NOTES:**

1. **ACs:** Both ACs must be qualified in the all phases of the mission to be accomplished. Transfer of pilot-in-command (PIC) duties between qualified ACs will be briefed to the crew.
2. **Loadmaster:** Two loadmasters or one loadmaster and another qualified crewmember are required if more than 40 passengers are scheduled to be carried (except during unit moves or contingencies). Both crewmembers must remain in the cargo compartment, one forward and one aft for takeoffs and landings.
3. **Loadmaster:** Only one loadmaster is required on augmented and augmented mission crews if other crewmembers can periodically scan the cargo compartment or perform spotter duties as required and the requirements of Note 2 are met.
4. **ECS:** On local training flights unit commanders may adjust the crew complement for these crew positions based on specific mission requirements and/or aircraft systems availability.
5. **MSO/ECS:** Positions not required to be manned for FCF and some training sorties (pilot proficiency, etc.).

**3.3. Additional Crewmembers (ACM).** An ACM is one assigned in addition to the normal aircrew complement required for a mission. ACM status granted under this paragraph is applicable only to AFSOC aircraft.

3.3.1. Policy Governing ACM Authorization. Unit commanders may authorize ACM status to personnel assigned or attached to the unit. ACM status will not be granted to personnel while on leave. Unit commanders have approval authority for personnel traveling on ACM orders to fly on aircraft under their control.

3.3.2. Orders. ACM travel authority must be cited on the orders and include the crew position for which the individual is qualified. Travel orders not citing ACM authorization must be accompanied by written authorization (letter or message).

3.3.3. Logging of Flying Time. Flight examiners, HQ and group tactics personnel, flight surgeons, and medical technicians log flying time IAW AFI 11-401, *Aviation Management*. Other ACMs may log flying time only at the discretion of the aircraft commander.

3.3.4. Briefings. The aircraft commander will ensure all ACMs are briefed on emergency procedures and egress.

3.3.5. Security Clearance. ACMs will possess a security clearance appropriate to the mission being performed.

### 3.4. Interfly .

3.4.1. The OG/CC or as specified in AFI 11-401 and MAJCOM supplements may authorize the interfly of assigned aircrew members. Normally, interfly should be limited to specific operations, exercises, or special circumstances, but may be used to relieve short-term qualified manpower shortfalls. Long-term interfly arrangements may be found in command-to-command memorandums of agreement (MOA) or similar-type documents as outlined paragraph 3.4. of this instruction along with AFI 11-401 and applicable MAJCOM Supplements. HQ Staff evaluation or inspection teams have existing interfly arrangements.

3.4.2. Interfly is authorized under the following conditions:

3.4.2.1. Aircraft ownership will not transferred.

3.4.2.2. As a minimum, crews will be qualified in the MDS and model as well as systems/configuration required to fly the aircraft and/or mission.

**EXCEPTION:** Crewmembers unqualified in the specific MDS and model aircraft will be under the direct supervision of a qualified instructor.

3.4.2.3. The interfly of aircrew members from different MAJCOMs or the interfly of active duty and ANG crew members require approval from each MAJCOM/DO and the ANG/XO, as applicable. The approval format may be a by name memorandum or more broad based MOA.

3.4.2.4. The unit OG/CC or agency requesting the agreement will initiate the interfly approval request in memorandum format to the OG/CC controlling the resource. Each commander involving the personnel resources (or MAJCOM, if appropriate) must concur with the interfly.

3.4.2.5. Request must include details of the deployment or mission including; aircrew name(s), duration, or special circumstances.

3.4.2.6. Crewmembers participating in interfly will follow the guidance of publications and procedures prescribed for the unit and MDS specific aircraft flown.

3.4.2.7. Flight Mishap accountability is MAJCOM designated by PEID code for the mishap aircraft.

3.4.2.8. Ground Mishap accountability is in accordance with AFI 91-204, *Safety Investigations and Reports*.

**3.5. Scheduling Restrictions.** In addition to restrictions listed in AFI 11-202V3 Chapter 9, *General Flight Rules*, crewmembers will not be scheduled to fly nor will they perform crew duties:

3.5.1. When the maximum flying time limitations of AFI 11-202V3 Chapter 9 will be exceeded.

3.5.2. Within 12 hours of takeoff or assuming alert after consuming alcoholic beverages or when under the influence of alcohol.

3.5.3. Within 24 hours after being administered anesthetics for dental or surgical procedures. Flight surgeons may authorize shorter periods of not less than 8 hours.

3.5.4. Do not takeoff prior to scheduled departure time if the early takeoff time would violate these restrictions.

3.5.5. When taking oral or injected medication unless individual medical waiver has been granted by HQ AFSOC/SG. Crewmembers may not self-medicate except IAW AFI 48-123, *Medical Examinations and Standards*. The following is a partial list of medications, which may be used without medical consultation:

3.5.5.1. Skin antiseptics, topical anti-fungals, 1 percent Hydrocortisone cream, or benzoyl peroxide for minor wounds and skin diseases, which do not interfere with the performance of flying duties or wear of personal equipment.

3.5.5.2. Single mild doses of over-the-counter aspirin, acetaminophen or ibuprofen to provide analgesia for minor self-limiting conditions.

3.5.5.3. Antacids for mild isolated episodes of indigestion.

3.5.5.4. Hemorrhoidal suppositories.

3.5.5.5. Bismuth subsalicylate for mild cases of diarrhea.

3.5.5.6. Oxymetazoline or phenylephrine nasal sprays may be used by aircrew as "get-me-downs" should unexpected ear or sinus block occur during flight. These should not be used to treat symptoms of head congestion existing prior to flight.

3.5.6. Aircrew members who accomplish aircraft ground pressurization checks of less than 10 minutes duration will be restricted from flying for 30 minutes.

**3.6. Crew Rest.** The minimum crew rest period is 12 hours from the start of crew rest until mission reporting. Infringement of the crew rest period will affect the start of another 12-hour inviolate crew rest period. MAJCOM DO/XO may waive all or any part of a crew rest period IAW AFI 11-202, Vol. 3. This waiver will normally accompany high priority mission tasking or a change in unit readiness.

**EXCEPTION:** ANG units only may use 10 hours, for home station local training flights IAW ANG/XO message 291535Z APR 01, provided the crewmember obtains 8 hours of uninterrupted rest.

**NOTE:** Flight crews should be afforded crew rest times in excess of the minimum at enroute stations, when possible, to give crews the opportunity to overcome the cumulative affects of fatigue while flying on several consecutive days or transiting several time zones.

3.6.1. Enroute Crew Rest and Ground Time:

3.6.1.1. A minimum 16-hour ground time between engine shutdown and mission takeoff should normally be planned unless extended post-flight duties are anticipated.

3.6.1.2. The aircraft commander may modify normal ground time in the interest of safety. Ground time can be modified to no less than 12 hours from the start of crew rest until mission reporting. Before reducing normal ground time, consider mission preparation time, time to load cargo, and other factors peculiar to the mission. The controlling C2 agency will not ask the aircraft commander to accept less than a normal ground time. Waivers for exercises and contingencies are according to AFI 11-401.

3.6.1.3. Crew rest normally begins 45 minutes after final engine shutdown. The 45-minute time period provides crews with time to complete normal post-flight duties. These duties include, but

are not limited to, refueling, up and down loading of cargo, performing maintenance, or completing mission debriefings.

3.6.1.4. If any crew member must stay at the aircraft past the 45-minute period, crew rest does not begin until post-flight duties are completed.

3.6.1.5. The 12 hour crew rest period provides the crew a minimum of 8 hours of uninterrupted rest plus time for transportation, free time, and meals. The crew will not be disturbed during this period, except during emergencies.

3.6.1.6. Do not manifest deadhead crewmembers as passengers to reduce or eliminate crew rest requirements. MAJCOM/DO is waiver authority for minimum 12-hour deadhead crewmember crew rest requirement.

3.6.2. Crewmembers departing on missions scheduled to recover away from home station should be notified 24 hours before reporting for the mission. The first 12 hours are not considered crew rest, but are designed to allow crewmembers to resolve personal affairs. During these first 12 hours, a crewmember may perform limited non-flying duties. The second 12-hour period is inviolate.

3.6.3. For crews on alert, crewmembers will enter crew rest 12 hours prior to the start of alert duties.

3.6.4. Standby crews will be given 12 hours crew rest prior to the earliest anticipated show time.

3.6.5. Crews will re-enter crew rest if their aircraft or mission (training or operational) is not capable of departure within 4 hours from the scheduled takeoff time.

**EXCEPTION:** The unit commander or designated representative may grant exceptions with the concurrence of the aircraft commander.

3.6.6. The crew chief is responsible to the aircraft commander. The aircraft commander will determine how long the crew chief can safely perform aircraft recovery actions. The crew chief must have the opportunity to sleep 8 hours of each 24-hour period. See AFI 21-101, *Maintenance Management Policy*, for detailed guidance.

3.6.7. Crew rest waivers approved for exercises and contingencies will be published in the OPORD / OPLAN or as approved by the MAJCOM/DO.

3.6.8. Post-Mission Crew Rest (PMCR).

3.6.8.1. Crewmembers, returning to their home base, will be given sufficient time to recover from the accumulative effects of their deployed mission and tend to personal needs. PMCR begins immediately on mission termination.

3.6.8.2. When the duty exceeds 16 hours away from home-station, provide one hour of PMCR time (up to a maximum of 96 – hours) for each 3-hours TDY. This time is in addition to, and will not run concurrently with, pre-departure crew rest. PMCR is not applicable to continuing missions.

3.6.8.3. The OG/CC or acting representative is designated PMCR waiver authority and will not delegate this authority. Limit PMCR waivers to extraordinary circumstances only and must not be used for day-to-day operations.

**NOTE:** PMCR is not applicable to ANG crews.

**3.7. Flight Duty Period (FDP) and Crew Duty Time (CDT ).** The FDP begins at show time or when crewmembers perform other duties prior to flight related duties and normally ends with aircraft engine shutdown following completion of the final mission segment. Since post-flight ground refueling, on/off-loading, and mission planning affect safety of flight, they should only be performed within the time constraints of the FDP. CDT is the amount of time an aircrew may perform combined FDP and post-mission duties to include maintenance, servicing, and debriefings, etc. Do not exceed the FDP or CDT limitations as explained below.

3.7.1. Crewmembers performing other duties prior to flight related duties: FDP and CDT begin when reporting for other duties.

**NOTE:** FDP, includes both military duty and civilian work, begins when reporting for the first duty period (military or civilian).

3.7.2. Maximum CDT for a basic crew is 18 hours. The aircraft commanders on operational missions already in execution may extend their basic CDT by a maximum of two hours.

3.7.3. The basic crew FDP.

3.7.3.1. For mission events, pilot proficiency training, and air refueling (AR), FDP is 16 hours. If the autopilot is not operational, or its use is denied for more than 4 hours, FDP will be 12 hours (the use of altitude hold does not constitute use of an autopilot). If the autopilot fails after departure, continue to the next scheduled stop and then comply with the basic FDP limitations.

3.7.3.2. Functional check flights (FCF) and acceptance check flights (ACF) will not be accomplished after 12 hours from reporting for duty. This requirement does not prevent missions from continuing IAW paragraph 3.7.3.1. once the restrictive events are accomplished.

3.7.3.3. Aircraft commanders may extend the basic FDP up to 2 hours for all non-mission sorties if required to reach the destination after airborne provided the mission priority justifies the increased risk and the PIC is unable to contact the waiver authority. (If this option is used, aircraft commanders must coordinate with command and control agencies so downstream activities are not adversely affected). Waiver authority guidance is found in AFI 11-202, Volume 3, MAJCOM Supplement.

3.7.4. Maximum CDT for an augmented crew is 26 hours.

3.7.5. Augmented crew FDP.

3.7.5.1. Augmented crew FDP is 24 hours for the EC-130J, provided no A/R events are accomplished after 18 hours.

3.7.5.2. If the autopilot is not operational or its use is denied for more than 8 hours, the FDP will be 16 hours. If the autopilot fails after departure, continue to the next scheduled stop and then comply with the applicable FDP limitations.

3.7.5.3. Pilot proficiency training and FCFs are not applicable to the augmented FDP and are restricted to the limitations of paragraphs 3.7.2. and 3.7.3.

3.7.5.4. Basic crews will not be augmented after FDP has started. (See paragraph 3.2.2.)

3.7.5.5. Crew changes should not be made immediately prior to performing critical phases of flight. Normally, 30 minutes prior to initiating the checklist for an event will allow the new crew-member time to get acclimated.

3.7.5.6. Minimum inflight crew rest facilities will be 3 bunks.

3.7.6. CDT normally ends 45 minutes after engine shutdown at the end of the mission. If any crewmember must perform mission-related duties beyond 45 minutes, CDT does not end until that crewmember completes these duties. Post-mission duties will not exceed maximum CDT.

3.7.6.1. Except when authorized by unit commanders at home station or deployed locations, crewmembers will not be used for mission related duties supporting other missions; i.e. to pre-flight other aircraft.

3.7.6.2. When unit commanders authorize crewmembers for post-mission duties supporting other missions; i.e., loading supervisors, these duties will not exceed 12 hours CDT.

3.7.7. The FDP and CDT length will be based on the mission to be performed. For example, if the planned mission duration is 15 hours from show time to termination, then a basic FDP and CDT is appropriate even if the crew is augmented. Once established, a basic FDP will not be changed to an augmented FDP, regardless of crew composition.

3.7.8. FDP for flight examiners administering flight evaluations and not occupying a primary crew position will not exceed the basic FDP of 16 hours.

3.7.9. Deadhead time before or after performing primary crew duties is FDP. Crewmembers may perform primary crew duties after deadheading if they will not exceed a basic FDP for the mission.

3.7.9.1. Crewmembers may perform primary crew duties after deadheading if they will not exceed a basic FDP for the mission to be flown beginning at reporting time for the deadhead flight.

3.7.9.2. Crewmembers may deadhead following primary crew duties if they will not exceed a 24-hour CDT beginning at reporting time for primary crew duties.

3.7.10. If the autopilot fails after departure, consider mission requirements and determine the best course of action to preclude further mission delays due to reduced FDP. Best course of action may include diverting to an airfield with maintenance capability. Contact C2 agencies, coordinate intentions, and comply with published limitations.

### **3.8. Alert Aircrew Procedures:**

**NOTE:** HQ AFSOC/DO is the waiver authority for paragraph 3.8.

3.8.1. Alert duty is defined as any period during which an alert crew is on call to perform a specific mission. Prior to entering crew rest, an aircrew will be given an expected alert time for the mission.

3.8.2. Publish unit alerting procedures in the supplement to this AFI. Provide a minimum of 2 hours from arrival at aircraft to stations time for crewmembers to complete preflight duties (if not previously preflighted).

3.8.3. Alert personnel are those required to be on duty for the prompt execution of the mission. Alert crews will be readily available in a location, which allows the crew to meet the required time to launch from notification. Suitable facilities include adequate sleeping accommodations for the entire crew.

3.8.4. The alert duty period will begin at a scheduled time determined by the unit / mission commander. Provide aircrew members an inviolate 12 hours crew rest prior to alert duty. The unit/mission commander will determine the length of the alert period, not to exceed 72 hours. Predeparture crew

rest is waived for flight surgeons or medical technicians who are on alert duty for urgent aero-medical evacuation missions.

3.8.5. The flight duty period will begin when the aircrew shows for flight duties. Crews may complete initial alert duties (e.g., briefing, preflight, and engine run of their alert aircraft) without starting their crew day. This time should not exceed 3 hours.

3.8.6. A daily update briefing may be accomplished without starting crew duty time. This brief can include weather, local Notices to Airman (NOTAMS), latest Flight Crew Information File (FCIF), special instructions (SPINS), and any other appropriate items. The aircraft commander determines which crewmembers attend the brief.

3.8.7. Flying the alert crew:

3.8.7.1. FDP/CDT starts when the crew reports for any duty other than stated in paragraph 3.8.5. within the alert period.

3.8.7.2. If the alert crew is launched and returns with FDP/CDT remaining, they may be launched again within the constraints of that crew day. Numerous circumstances may arise that affect the decision to replace the alert crew and each incident must be evaluated on an individual basis.

3.8.8. If the alert crew completes 12 consecutive hours of crew rest between flights or official duties, the previous FDP/CDT period no longer applies and the cycle can be started anew provided the crew does not remain on alert for more than 72 hours from their initial assumption of alert.

3.8.9. The alert crew will not be used as a “preflight” or “engine run” crew for aircraft other than their alert aircraft, or perform other official duties (e.g., additional duties, commander’s call, safety meeting, etc.).

3.8.10. An alert crew will not remain in alert status for more than 2 consecutive 72-hour alert periods. The crew will receive 12 hours of premission crew rest between the first and second alert periods.

3.8.11. Provide post-alert crew rest for crews required for alert at locations other than their normal domicile. Provide 1 hour of free time for every 3 hours on alert. This time off does not include the normal 12 hours for crew rest prior to assuming another alert period or flying mission.

## Chapter 4

### OPERATING GUIDELINES AND RESTRICTIONS

#### *Section 4A—Introduction*

**4.1. Objective .** The ultimate objective of the aircraft maintenance team is to provide an aircraft for launch with all equipment operational fully mission capable (FMC). Manpower limitations, skills, and spare part availability may have a negative impact on achieving this goal. However, under specific circumstances, some missions can be safely operated without all equipment being operational. The final responsibility regarding equipment required for a mission rests with the aircraft commander. If one aircraft commander accepts an aircraft for a mission or mission segment without an item or system, this acceptance does not commit that aircraft commander, or a different aircraft commander, to subsequent missions with the same item or system inoperative. See paragraph 4.31 for detailed information on maintenance identifier codes.

**4.2. Policy .** This chapter provides guidance on how to operate the aircraft and to what limit the aircraft may be operated with degraded equipment. If the aircraft commander elects to operate with degraded equipment or aircraft systems, coordinate mission requirements (i.e., revised departure times, fuel requirements, maintenance requirements, etc.) prior to flight with the mission control agency to ensure the decision does not adversely impact follow-on missions. This list is not inclusive of all equipment or systems essential to airworthiness). For operations under an ANG mission number(s), coordinate through the ANG Operations Center (ANG/XOC).

4.2.1. The AC is responsible for exercising the necessary judgment to ensure no aircraft is dispatched with multiple items inoperative that may result in an unsafe degradation and/or an undue increase in crew workload. The possibility of additional failures during continued operation with inoperative systems or components shall also be considered. This chapter is not intended to allow for continued operation of the aircraft for an indefinite period with systems/subsystems inoperative. The Minimum Equipment List (MEL) shall not direct deviation from the aircraft flight manual limitations, emergency procedures, or USAF/MAJCOM directives. The diversity of the EC-130J operating on various worldwide missions complicates the task of balancing operational reliability with safe mission completion. Safety-of-flight is paramount.

4.2.2. If, after exploring all options, an AC determines a safe launch is possible with an item inoperable (beyond a particular restriction) the AC shall request a waiver. Use C2 channels to notify the appropriate execution agency of intentions.

**4.3. Technical Assistance Service.** The AC may request (at anytime in the decision process) technical support and additional assistance from their home unit, MAJCOM staff, and maintenance representatives.

4.3.1. ACs electing to operate with degraded equipment or aircraft systems (with appropriate waiver) must coordinate mission requirements (i.e., revised departure times, fuel requirements, maintenance requirements, etc.) with the controlling C2 agency prior to flight.

4.3.2. If beyond C2 communication capability, the AC may deviate from this chapter as specified in [Chapter 1](#), paragraph [1.7](#). Report deviations (without waiver) through channels to appropriate

MAJCOM DO/XO within 48 hours. Units must be prepared to collect background information and submit a follow-up written report upon request.

4.3.3. When it is necessary to protect the crew or aircraft from a situation not covered by this AFI and immediate action is required, the AC may deviate from the Minimum Equipment List (MEL) and this chapter. Report deviations (without waiver) through channels to appropriate MAJCOM DO/XO within 48 hours. Units must be prepared to collect background information and submit a follow-up written report upon request.

**4.4. MEL Supplements.** Each MAJCOM and flying unit may supplement the Minimum Equipment List (MEL). Supplements may only be more restrictive. MAJCOMs include MEL details in MAJCOM supplements. Flying units may include MEL details in their supplement to chapter 10 of this AFI.

#### *Section 4B—Aircraft Operating Guidelines and Restrictions*

**4.5. Ground Evacuation.** For all ground emergencies, which require evacuating the area around the aircraft, extend the distance to 500 ft when chaff and/or flares are loaded on the aircraft.

**4.6. Cross Wind Limitations.** Maximum crosswind limits are in accordance with flight manual limitations. Pilots remain within the “recommended” or “caution” areas of the crosswind charts for normal takeoffs and landings

**4.7. Aircraft Maximum Gross Weight Policy.** Normally the aircraft gross weight will not exceed 155,000 pounds for all EC-130J operations. Waiver authority for operations from 155,000 to 165,000 pounds is COMAFSOF or OG/CC. Operations above 165,000 pounds require approval from HQ AFSOC/DOV or ANG/XO. Reference [Chapter 9](#) for additional gross weight limitations associated with aircrew training.

#### **4.8. Takeoff and Landing Policy. .**

4.8.1. The pilot in command will occupy either the left or right seat during all takeoffs and landings.

4.8.2. Instructor and flight examiner pilots may takeoff or land from either seat.

4.8.3. An aircraft commander qualified pilot may make takeoffs and landings from either seat. Comply with paragraph [4.9](#).

4.8.4. An instructor pilot or AC will make all takeoffs and landings from the left seat during:

4.8.4.1. Aircraft emergencies, unless conditions prevent compliance.

4.8.4.2. Missions operating in areas of hostile activity.

4.8.4.3. Situations when in the opinion of the AC, marginal conditions exist.

4.8.4.4. Substandard airfield operations. Arrival and departure at airfields that require wing commander or COMAFSOF approval as indicated in paragraph [5.16](#). Flight examiner and instructor pilots may perform or demonstrate takeoffs and landings from either seat into certification airfields specified in the HQ AMC Airfield Suitability and Restrictions Report (ASRR).

4.8.5. ACs who possess less than 100 PAA hours since certification in the EC-130J will perform all takeoffs and landings from the left seat.

**EXCEPTION:** They may allow ACs or higher to perform takeoffs and landings when required for currency.

**4.9. Copilot Landing Policy.** Except as specified above, and provided no patients or distinguished visitor (DV) four or higher are on board, copilots may takeoff or land:

4.9.1. From either seat if an instructor or flight examiner occupies the other seat.

4.9.2. From the right seat if an AC with over 100 PAA hours occupies the left seat or from either seat if an instructor or flight examiner occupies the other seat.

**4.10. Senior Staff Officers Policy.** Senior staff members (pilots only) or O-coded pilots (i.e. OP) who have completed the C-130J Senior Staff Familiarization course will occupy the left pilot seat only and be under direct IP supervision. Pilots flying under indoctrination status will not control the aircraft during:

4.10.1. Takeoff, landing, or instrument approaches when the weather is below 1500 / 3.

4.10.2. Inflight Refueling (receiver only)

4.10.3. Tactical low-level

4.10.4. Inflight emergencies (actual or simulated)

**4.11. Maximum Effort Procedures .** Maximum effort takeoffs and landings are prohibited. This should not be confused with obstacle clearance climb profiles, which are authorized.

**4.12. Threat Maneuvers.** At the aircraft commanders discretion, the use of all aggressive tactics procedures (as outlined in AFTTP 3-1, Vol 32) are authorized when the crew is in an actual threat situation which requires immediate action to protect the crew and aircraft.

**4.13. Cruise:**

4.13.1. Mission permitting, only one pilot is required at the flight controls during oceanic route segments.

4.13.2. The Aircraft Commander will check destination and alternate weather prior to the ETP on all flights requiring inflight fuel management or when inflight fuel is critical.

4.13.3. Mission permitting, monitor the following radio frequencies overwater: VHF – 121.5 MHz, UHF - 319.4 MHz, 243.0 MHz, or as assigned, and HF - as assigned.

**4.14. Flight Operations at Tactical Altitudes:**

4.14.1. A functional radar altimeter, set to the appropriate terrain clearance, is required on all flights employing tactical altitude and modified contour procedures.

4.14.2. If the Ground Collision Avoidance System (GCAS) audio is not heard, any crewmember observing a radar altimeter low altitude warning will use the word "altitude" to relay this information to the pilot flying the aircraft. The pilot will take immediate action to correct the altitude.

4.14.3. If combat/contingency mission requirements dictate, aircrews may plan and fly day VMC ingress/egress routes at tactical altitudes.

4.14.4. If combat/contingency mission requirements dictate, qualified aircrews may plan and fly night VMC ingress/egress routes as low as the MSA for each leg or route segment with the Operations Group commander's approval.

#### ***Section 4C— Aircraft Operating Restrictions***

**4.15. One-Time Flights.** An aircraft may be released for a one-time flight with a condition that might be hazardous for continued use if the aircraft is airworthy for one flight to another station. Waiver authority is HQ AFSOC/DO.

4.15.1. The chief of maintenance, the senior maintenance officer, or the chief of the Air Force Material Command (AFMC) repair team must first authorize the release.

4.15.2. After the maintenance release is obtained, contact AFSOC/ANG for flight authorization.

4.15.3. The maintenance release, AFSOC/ANG approval, and the aircraft commander's concurrence are all required before the aircraft can be flown to the specified destination.

**4.16. Three-Engine Takeoffs.** Actual engine-out takeoffs require HQ AFSOC/DO or ANG/XO waiver as applicable.

**4.17. Fuel System.** The primary concern with inoperative fuel boost pumps or quantity indicators is fuel balance and wing loading. Degraded operation is permissible, however, flight crews must consider potentially trapped fuel and decreased range should further degradation occur. The Minimum Equipment List (MEL) included in [Section 4E](#) of this chapter along with the following paragraphs provide guidelines for degraded fuel system operations under most circumstances.

4.17.1. For other than normal ground refueling/defueling operations and associated guidelines in this chapter, fuel will not be transferred into or out of a main fuel tank with an inoperative indicator or its symmetrical tank except the following:

4.17.1.1. Fuel transfer into a main tank with an inoperative indicator may be accomplished during contingency or emergency fuel need situations. All transfers, under these conditions, will be coordinated verbally and visually by the pilot monitoring with the pilot flying as a backup for lateral wing balance. Compliance with other MEL restrictions still apply.

4.17.1.2. A reliable source of known quantity transferred must be available. This source can be either the internal aircraft operating fuel quantity indicators or inflight refueling tanker fuel onload data.

4.17.1.3. Maintain symmetrical tanks within 1,000 pounds at all times. If small amounts (4,000 pounds or less) must be transferred, then transfer up to 1,000 pounds into the tank with the inoperative indicator followed by an equal amount into the tank(s) with operative indicator(s). If large amounts of fuel must be transferred, then transfer 1,000 pounds into the tank with the inoperative indicator, then up to 2,000 pounds as needed into the tank(s) with the operative indicators, then up to 1,000 pounds as needed into the tank with the inoperative indicator to bring all tanks symmetrical, or continue up to 2,000 pounds as needed, repeating the cycle until desired fuel quantity and balance is achieved in applicable tanks.

#### 4.18. Navigation Systems:

4.18.1. Refer to the navigation system performance requirements located in applicable sections of the Flight Information Planning (FLIP) document, for route structures and the intended areas of operation. The EC-130J navigation system is capable of meeting the following Air Traffic Management (ATM) initiatives and Required Navigation Performance (RNP) standards with the implementation of version 5.3 or higher software, or as noted.

4.18.1.1. BRNAV (RPN 5)

4.18.1.2. RNP - 10

4.18.1.3. TCAS - 7

4.18.1.4. Improvements added with the implementation of version 5.4 software.

4.18.1.4.1. Reduced Vertical Separation Minima (RVSM).

4.18.1.4.2. Navigation and Communications FM Immunity.

4.18.2. The GPS currently installed in the EC-130J navigation suite does not meet FAA certification requirements for IFR navigation. However, IAW AFI 11-202V3, AFSOC has endorsed the use of the GPS as a mission enhancement aid.

4.18.3. For CAT II routes (not including operations in BRNAV airspace), the EGI or GPS can be used as a controlling solution for en route instrument navigation if NAVAIDS are available for monitoring.

4.18.4. General CAT I route operation. The following procedures apply to all Category I route operations unless more restrictive procedures are identified for specific Air Traffic Management (ATM) initiatives.

4.18.4.1. As a minimum, a single functional EGI system, which includes GPS and INS inputs, is required. Depending on specific circumstances, the AC may implement more restrictive minimum navigation capability requirements to safely accomplish the mission. Consider the following: length and route of flight, weather, and experience and proficiency of the crew.

4.18.4.2. On CAT I routes (not including operations in RNP airspace), the EGI or GPS may be used as the controlling solution providing the aircrew can monitor its performance using the off-side INS as an independent navigation source.

4.18.4.3. Configure the Communications/Navigation/Identification Management System (CNI-MS) as follows. Set the INAV Position Alert 1 to 4.0 NM and INAV Position Alert 2 to 8.0 NM on the CNI Progress 2/3 page.

4.18.5. For flights in Minimum Navigation Performance Specification (MNPS) airspace in the North Atlantic Region, Pacific Organized Track system (PACOT), or the Composite Hawaii/Mainland US Route Systems (not including operations in RNP airspace), the following minimum operable navigation systems are mandatory:

**NOTE:** ATC uses the same reporting and investigating criteria for gross navigational errors that occur below as well as within MNPS airspace.

4.18.5.1. Prior to entering MNPS airspace, both Embedded GPS / INS (EGI) navigation systems must be fully operational. Advise ATC when the aircraft does not meet this requirement and obtain

a clearance to return to the nearest maintenance repair facility or refile the flight plan via non-MNPS routes specified in FLIP.

4.18.5.2. After entering MNPS airspace, flight may be continued with a minimum of only one functional EGI system, which includes both GPS and INS inputs, or two functional INS. Advise ATC when the aircraft does not meet this requirement, and expect either a rerouting to non-MNPS airspace or a clearance to return to the nearest maintenance repair facility.

4.18.5.3. For all MNPS airspace, an INS-only solution will be used as the controlling solution and the aircrew will monitor its performance using the offside EGI or INS as an independent navigation source.

4.18.5.4. Equipment listed in FLIP is mandatory for compliance with MNPS. Loss of any required component before track entry requires returning to a station with maintenance capability or refueling via routes specified in FLIP AP/2.

4.18.6. For flights in the North Pacific Region (NOPAC) Minimum Navigation Performance Specification (MNPS) airspace, comply with the following additional procedures when transiting the Anchorage/Tokyo Oceanic CTA/FIRs on the NOPAC North route. The following minimum operable navigation systems are mandatory:

4.18.6.1. Prior to entering the NOPAC North route, the radar and both Embedded GPS / INS (EGI) navigation systems must be fully operational.

4.18.6.2. After entering the NOPAC North route:

4.18.6.2.1. Aircraft on the NOPAC North route may continue without functional radar, if radar is not required for weather avoidance, as long as both EGI systems are fully functional to include GPS and INS inputs. If the INS and EGI accuracy cannot be determined, either refile a flight plan on another track (fuel permitting) or return to the nearest facility possessing maintenance capability

4.18.6.2.2. Aircraft on the NOPAC North route may continue with only one functional EGI system, which includes both GPS and INS input, or two functional INS provided the radar system is fully functional. Verify inflight that satisfactory RADAR returns are available on all ranges, particularly the 80, 160, and 320 NM ranges. If the radar system is either marginal or inoperative, fuel permitting, refile a flight plan to another track or return to the nearest facility possessing maintenance capability.

4.18.6.2.3. Aircraft that do not meet the requirements of paragraphs [4.18.6.2.1.](#) or [4.18.6.2.2.](#) will return to the nearest maintenance repair facility.

4.18.7. RNP-10 operational procedures and limitations.

4.18.7.1. RNP-10 certification for the EC-130J is based on raw INS data. The EGI or GPS cannot be used as a controlling solution in RNP-10 airspace, even when using INS as the sole input source for the EGI.

4.18.7.2. RNP-10 compliance includes navigation accuracy within 10NM of actual position 95% of the time. EC-130J aircraft are qualified for flight in RNP-10 airspace when the following conditions are met:

4.18.7.3. The aircrew will monitor the controlling INS performance using the offside INS or EGI as an independent navigation source.

4.18.7.4. Prior to entering RNP-10 airspace, both Inertial Navigation Systems (INS) along with the Embedded GPS / INS (EGI) systems must be fully operational. Advise ATC when the aircraft does not meet this requirement prior to entering RNP-10 airspace and obtain a clearance to return to the nearest maintenance repair facility or refile the flight plan via a non-RNP route.

4.18.7.5. EC-130J aircraft are limited to a maximum of 10.4 hours of operation in RNP-10 airspace without an INS update, beginning when the INS enters the navigation mode after a full Gyro-Compass (GC) ground alignment. The Gyro-Compass alignment may be initiated either automatically by selecting AUTONAV on the CNI-MU Power Up page to initiate an EGI alignment or manually using the INS 1/2 Alignment functions accessed from the CNI-MU INDEX pages.

4.18.7.5.1. The clock can be reset for an additional 10.4 hours maximum, following an in-flight alignment (IFA) of an INS that meets the requirements of paragraph [4.18.7.5.2](#).

4.18.7.5.2. Because the GPS receivers in the EGIs do not incorporate Receiver Autonomous Integrity Monitoring (RAIM), if an inflight alignment is used to reset the 10.4 hour clock, it may only be conducted on one INS at a time and within coverage of an FAA/CAA approved Radio-NAVAID. The resulting alignment must provide a position that agrees with the position provided by the Radio-NAVAID within 0.3 NM. After verifying the position accuracy of the first INS alignment, the second INS may be in-flight aligned and its position compared to the first INS, or to the Radio-NAVAID.

#### 4.18.8. Basic Area Navigation (BRNAV) operational procedures and limitations.

4.18.8.1. Airspace where BRNAV is applied is considered special qualification airspace. Both the operator and the specific aircraft type must be approved for operations in these areas. BRNAV navigation accuracy criteria is RNP-5. The EC-130J is approved for BRNAV operations when the following conditions are met.

4.18.8.2. Flights entering BRNAV airspace after long overwater flights must be especially aware of BRNAV tolerances and navigation system updated accordingly.

4.18.8.3. An INS/RADIO (INS/RAD) solution with AUTOTUNE enabled shall be the controlling navigation mode used for all operations in BRNAV airspace without time restrictions.

4.18.8.4. Minimum equipment to operate in BRNAV airspace with no time restriction is one fully functional INS/RADIO (INS/RAD) solution with AUTOTUNE enabled. The EGI or GPS cannot be used as a controlling solution in BRNAV airspace, even when using INS as the sole input source for the EGI.

4.18.8.5. Should the NAVAIDs become unavailable, either through radio failure or denial, the INS-only solution will maintain BRNAV accuracy for 2.6 hours (from the time the EGIs were commanded to the NAV mode).

4.18.8.6. The aircrew will monitor the controlling INS/RAD or INS-only performance, as applicable, using the offside INS or EGI as an independent navigation source, when available.

4.18.8.7. Configure the Communications/Navigation/Identification Management System (CNI-MS) as follows. Set the INAV Position Alert 1 to 1.0 NM and INAV Position Alert 2 to 5.0 NM on the CNI Progress 2/3 page.

4.18.8.8. Aircraft unable to maintain BRNAV tolerances must advise ATC immediately and take appropriate coordination actions.

4.18.8.9. Document (in the aircraft forms) malfunctions or failures of BRNAV required equipment, including the failure of this equipment to meet BRNAV tolerances.

4.18.9. Reduced Vertical Separation Minimum (RVSM) Airspace. Airspace where RVSM is applied is considered special qualification airspace. Both the operator and aircraft must be approved for operations in RVSM airspace. With the implementation of aircraft version 5.4 software, the C-130J is approved for unrestricted use in the full RVSM envelope. Refer to FLIP AP/2 and the following for RVSM requirements:

4.18.9.1. Both primary altimeters, at least one autopilot, the altitude advisory system, and the transponder must be fully operational prior to entry into RVSM airspace. Should any of this equipment fail prior to entering RVSM airspace, request a new clearance so as to avoid this airspace.

4.18.9.2. The autopilot should be engaged during level cruise, except when circumstances such as the need to re-trim the aircraft or turbulence require disengagement.

4.18.9.3. Continuously crosscheck the primary altimeters to ensure they agree  $\pm 200$  ft.

4.18.9.4. Aircrews should limit climb and descent rates to 1,000 feet per minute when operating in the vicinity of other aircraft to reduce potential effects on TCAS operations.

4.18.9.5. Should any of the required equipment fail after entry into RVSM airspace, immediately notify ATC and coordinate a plan of action.

4.18.9.6. Document (in the aircraft forms) malfunctions or failures of RVSM required equipment, including the failure of this equipment to meet RVSM tolerances.

4.18.10. A back-up hand-held GPS, also known as a portable GPS unit (PGU), is required on all missions transiting a category 1 route segment of 3 hours or more. The operation of a PGU on the EC-130J will be in compliance with all guidance as outlined in AFI11-202V3 and associated MAJCOM publications.

4.18.10.1. Before using a PGU inflight, aircrew members must receive training.

4.18.10.2. Only PGUs approved by the unit Stan/Eval will be used.

4.18.10.3. When unit aircraft deploy, there will be a PGU for each deployed aircraft.

4.18.10.4. The use of any PGU is restricted to operation above 10,000 ft AGL only.

4.18.10.5. The PGU will not be used as a primary navigation system or to update any aircraft navigation system. The PGU is intended for use as only a back-up system while on category 1 route segments in the event the a primary aircraft navigation system failure, i.e. INU and GPS.

4.18.10.5.1. The PGU is not approved for any form of IFR navigation. In an emergency situation the crew should use the best available information, but should not be operating in a manner to put themselves in the situation of having to use a PGU for IFR navigation.

4.18.10.5.2. Only PGU navigation functions to include position, ground speed, true or magnetic ground track, and course information referenced to manually entered waypoint data will be used.

#### ***Section 4D—Aircraft Maintenance Support Guidelines and Restrictions***

**4.19. General.** This section contains normal procedures for pilots and loadmasters not contained in the flight manual or applicable technical orders. The aircrew normally does not perform routine servicing or maintenance, but are authorized to perform those aircrew maintenance support tasks found in this section. The aircrew performs these tasks only in the absence of qualified maintenance personnel, and when required for mission accomplishment.

**4.20. Authority to Clear a Red X.** Refer to T.O. 00-20-5, "Downgrading a Red X for One-Time Flight." ACs may clear a red X only in the absence of qualified maintenance personnel, or when required for mission accomplishment. The AC must obtain authorization from the home station chief of maintenance, deployed maintenance officer, or designated representative.

#### **4.21. Refueling/Defueling.**

4.21.1. Refer to T.O. 1EC-130J-1 and T.O. 1C-130J-2-12JG-28-1 (**TOs will need to be verified**). For normal refueling, two qualified personnel are required. Loadmasters are not normally required to refuel or defuel EC-130J aircraft; however, the loadmaster may refuel and defuel when maintenance personnel are unavailable. Use the appropriate checklist during all refueling and defueling operations. If ground support personnel are not available, the aircraft commander will designate other crewmembers to assist the loadmaster.

4.21.2. Refer to T.O. 00-25-172 (**TO will need to be verified**) for Concurrent Servicing Operations. Crewmembers may act as Concurrent Servicing Supervisor (CSS).

**4.22. Maintenance Identifiers.** Use the following maintenance identifiers to effectively communicate an aircraft's status:

4.22.1. Mission Essential (ME). An item, system, or subsystem component essential for safe aircraft operation or mission completion will be designated Mission-Essential (ME) by the AC in AFTO Form 781A, **Maintenance Discrepancy and Work Document**. Include a brief explanation of the reason for ME status in the AFTO Form 781A discrepancy block. An AC accepting an aircraft (one mission or mission segment) without an item or system does not commit that AC (or a different AC) to subsequent operations with the same item or system inoperative.

4.22.2. Mission Contributing (MC). Any discrepancies that are not currently ME, but may become ME (if circumstances change), are designated as MC in the AFTO Form 781A discrepancy block. Every effort will be made to clear the MC discrepancies at the earliest opportunity to the extent that maintenance skills, ground time, and spare part availability permit. If subsequently, in the AC's judgment, mission safety would be compromised by the lack of any component, he may re-designate the said component as ME. However, do not delay a mission to correct an MC discrepancy.

4.22.3. Open Item. Any discrepancy not expected to adversely impact the current mission or any subsequent mission is not designated MC or ME. These items receive low priority and are normally

worked at home station. Do not accept an aircraft from factories, modification centers, or depots unless all instruments are installed and operative.

#### **Section 4E— EC-130J Minimum Equipment List (MEL) Tables**

**4.23. MEL Definitions.** The following definitions are specifically to the MEL tables in this section.

4.23.1. Home Station. Home bases of assignment for EC-130J aircraft. Aircraft will not depart their home stations unless MEL home station requirements are met. **EXCEPTION:** During wartime, enroute criteria will apply to all aircraft departures.

4.23.2. En route Station. Enroute locations where C-130J maintenance repair capability exists. An enroute station has the necessary skilled USAF, or USAF-contract maintenance personnel, support equipment, and technical data available to accomplish most repairs.

4.23.3. Local Training. A mission that departs home station to perform home station transition, tactics, mission, or inflight refueling training and returns in the same day.

4.23.4. Off-Station Training. As directed by the wing commander, a mission that departs home station to perform training without returning the same day. These missions will be supported by deployed home station logistics. Note: Off-Station Trainers are considered local training for the purposes of this chapter.

**Table 4.1. Engines / Auxiliary Power Unit (APU).**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Engines	4	4	Do not take off with nonstandard aircraft configuration or power unless a hostile threat to the aircraft and/or crew makes it imperative.  Do not take off unless all four engines will achieve takeoff power settings.
Automatic Thrust Control	1	1	
FADECs (Local)	8	8	
FADECs (Enroute)	8	7	If a FADEC fails at an enroute stop, flight to a destination with repair capability, including enroute stops, may be made.
Horsepower (HP) Display	4	4	
Measured Gas Temperature (MGT) Display	4	4	
Gas Generator Speed (NG) Display	4	4	
Power Turbine Speed (NP) Digital Readout	4	4	
Fuel Flow Digital Readout	4	3	One may be inoperative provided all other engine readouts are available.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Gearbox Oil Pressure Digital Readout	4	4	One may be inoperative provided engine oil temperature digital readout is operative, all other engine readouts/displays are operative, and the "GEARBOX OIL PRESS SWITCH INOP" does not appear on the Fault Log.
Engine Oil Pressure Digital Readout	4	4	One may be inoperative provided engine oil temperature digital readout is operative, all other engine readouts/displays are operative, and the "ENGINE OIL PRESS SWITCH INOP" does not appear on the Fault Log.
Oil Temperature Digital Readout	4	4	
Oil Quantity Digital Readout	4	3	One may be inoperative provided all other engine readouts are available and the tank is dipped and quantity verified before each flight.
NP Sensor (Local)	2	2	
NP Sensor (Enroute)	2	1	If a sensor fails an at enroute stop, with to a destination with repair capability, including enroute stops, may be made.
NG Sensor (Local)	2	2	
NG Sensor (Enroute)	2	1	If a sensor fails an at enroute stop, with to a destination with repair capability, including enroute stops, may be made.
Oil Cooler Flap Automatic Operation	4	0	May be inoperative if the Oil Cooler Flap Actuator is operative and associated Engine Oil Temperature readout is operative.
APU	1	1	If the APU fails, flight in visual meteorological conditions (VMC) is authorized provided no other electrical malfunctions exist. If the APU generator is inoperative, the generator will be removed and padded prior to operation of the APU.

**Table 4.2. Propellers.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Propeller Synchrophasing Relay	1	0	If the synchrophaser fails, mission may continue to a repair facility provided no other portion of the propeller system is affected.

**Table 4.3. Electrical System.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Generators, Engine-Driven (Local)	4	4	Local training missions may continue after a generator has failed in flight and no other electrical malfunctions exist.
Generators, Engine-Driven (Enroute)	4	3	If a generator fails at an enroute stop, flight to a destination with repair capability, including enroute stops, may be made if no other electrical malfunction exists.
APU/APU Generator	1	1	If the APU/APU generator fails, flight in instrument meteorological conditions (IMC) is not authorized. Flight in visual meteorological conditions (VMC) is authorized provided no other electrical malfunctions exist.
Essential Avionics AC Bus	1	1	
Main Avionics AC Bus	1	1	

**Table 4.4. Fuel System.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Main Tank Fuel Pumps	4	4	
Aux Tank Pumps	2	2	May be inoperative provided tank is empty
Main Tank Transfer Pumps	4	4	
Crossfeed Valves	4		May be inoperative provided the associated FLCV valve is operative and the affected crossfeed valve is secured closed.
Cross-ship Valve	3	2	One may be inoperative provided, all main tank crossfeed valves are operative, and fuel quantity readouts for all tanks containing fuel are operative.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Aux Tank Fuel Quantity Readout	2	2	<p>One may be inoperative provided:</p> <p>All fuel flow indicators are operative, associated fuel boost pump is operative. Maintain symmetrical engine fuel flow.</p> <p>All other fuel quantity indicators for tanks with fuel on the same side of the Cross-ship Valve are operative.</p> <p>The affected indicator must be electrically secured, and the fuel quantity in the associated tank is must be verified by an accepted procedure before takeoff.</p> <p>Both readouts may be inoperative provided fuel tanks are verified empty and indicators are electrically secured.</p>
Main Tank Quantity Readouts	4	4	<p>One indicator may be inoperative provided:</p> <p>All fuel flow indicators are operative, associated fuel boost pump is operative.</p> <p>All other fuel quantity indicators for tanks with fuel on the same side of the Cross-ship valve are operative.</p> <p>The affected indicator must be electrically secured and the fuel quantity in the associated tank must be verified.</p> <p>Engine out training using the engine corresponding to the inoperative indicator or its symmetrical opposite will not be conducted during tank to engine operation.</p> <p>Crossfeed operation will begin when the symmetrically opposite quantity indicator has decreased to 1,500 lbs (inboards) and 2,500 lbs (outboards).</p> <p>Flights consisting of multiple stops when the mission profile does not allow dipping of tanks (i.e., ERCCs, EROs, local trainers) will terminate with a minimum of 8,000 lbs calculated main tank fuel.</p>

**Table 4.5. Hydraulics.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Stick Pusher/Stall Warning System	1	1	
Engine-driven Hydraulic Pumps	4	4	
Utility/Booster System Engine Pump Pressure Warning Lights	4	4	
Hydraulic Pressure (utility, booster, and aux) digital readouts (systems status page)	1	1	All digital readouts must be operational except:  The aux pressure readout may be inoperative provided the aux pump digital display on the copilot's hydraulic panel is operational.  Only one of the rudder boost readouts is required.
Suction Boost Pump Warning Lights	2	2	
Hydraulic Suction Boost Pumps	2	2	
Auxiliary Hydraulic Pump	1	1	
Auxiliary Hydraulic Pressure Indicator	1	1	Direct reading gauge in cargo compartment may be inoperative.

**Table 4.6. Anti-Ice / De-Ice System.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Ice Detectors	2	2	One or both may be inoperative provided aircraft is not flown in known, or forecast icing conditions.
Pitot-Heat System	2	2	(See NOTE 1)
Pitot Heat Warning System			(See NOTE 1)
Wing/Empennage Anti-Ice and De-Ice Systems	1	1	(See NOTE 1) System must be operational in all 7 (seven) zones if system is required.
Engine Inlet Air Duct Anti-Icing Systems	4	4	(See NOTE 1)
Leading Edge Temperature Indicators	6	6	

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Wing Leading Edge and Wheel Well Over temperature Warning Lights	7	7	
Propeller Anti-Icing/De-Icing Systems	4	0	(See NOTE 1)
Windshield Heat System	2	2	(See NOTE 1)

**NOTE 1:** System may be inoperative provided aircraft is not operated in known or forecast icing conditions.

**Table 4.7. Brake/Anti Skid Systems.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Wheel Brakes	4	4	
Anti-Skid (Home Station/Enroute)	1	1	The antiskid may be inoperative for flight to a destination with repair capability, including enroute stops.
Anti-Skid (Local Training)	1	1	A local training flight may continue once airborne if the antiskid fails provided the system is turned off. The mission is restricted to one termination landing..

**Table 4.8. Flight Recorders/Locating Systems.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Digital Flight Data Recorder (DFDR)	1	1	The DFDR will be operational for all departures unless parts are not available on station to repair the unit.
Cockpit Voice Recorder (CVR)	1	1	The CVR will be operational for all departures unless parts are not available on station to repair the unit.
Emergency Locator Transmitter	1	1	
Underwater Acoustical Locator Beacon (UALB)	1	1	

**Table 4.9. Fire Protection/Warning Systems.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Fire Extinguisher System	2	2	Both bottles will be serviceable.
Fire and Overheat Warning Detection System	1	1	Includes all components of the engine and APU fire/overheat system.
Smoke Detector Units	4	4	One or more cargo compartment detectors may be inoperative provided the loadmaster, or extra crewmember can visually observe the area during flight. The No. 1 detector (located in the under deck avionics compartment) is always required.

**Table 4.10. Air Conditioning, Pressurization and Bleed Air.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Flight Deck and Cargo Compartment Air Conditioning Units	2	2	<p>Pressurization and both air conditioning systems should be operational for EC-130J missions sorties.</p> <p>Pressurization and both air conditioning systems are normally essential if passengers or patients are carried. If a system fails, flight to a destination with repair capability (including enroute stops) may be accomplished (coordinate with the senior medical AECM when patients are carried). Passengers and patients will be briefed on the possibility that discomfort may be encountered.</p> <p>One air conditioning unit may be inoperative provided the associated flow control valve is fixed closed.</p> <p>Both air conditioning units may be inoperative provided both flow control valves are fixed closed and the aircraft can fly in an unpressurized configuration.</p> <p>Air conditioning and pressurization are not required for low altitude missions if a reasonable temperature can be maintained.</p>
Flight Station Auxiliary Vent Valve	1	1	May be inoperative provided the affected valve is secured closed and the cargo compartment aux vent valve is operative.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Cargo Compartment Auxiliary Vent Valve	1	1	May be inoperative provided the affected valve is secured closed and the flight station aux vent valve is operative.
Automatic Temperature Control System	1	1	Either the cargo compartment or flight station automatic temperature control system may be inoperative provided its respective manual temperature control system is operative
Cargo Compartment Underfloor Heating	1	1	May be inoperative provided regulation of cargo compartment temperature is not a mission requirement.
Auto Cabin Pressure Controller	1	1	May be inoperative provided: Manual pressure control system is operative. Cabin rate of climb, differential pressure and cabin altitude readouts are operative. OR Aircraft is operated unpressurized.
Cabin Altimeter Readout	1	1	May be inoperative for unpressurized flight.
Cabin Differential Pressure Readout	1	1	May be inoperative for unpressurized flight.
Cabin Rate of Climb Readout	1	1	May be inoperative for unpressurized flight. Must be operational for pressurized flight if patients are carried.
Emergency Depressurization Switch	1	1	
Emergency Depressurization Handle	1	1	

**Table 4.11. Landing Gear.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Landing Gear System	1	1	<p>If a landing gear malfunction is encountered, make a full stop landing and correct the discrepancy prior to the next flight.</p> <p>If repair capability does not exist and further flight can be made with the gear down and locked, the aircraft may be flown to the nearest destination with repair capability (including enroute stops), provided the gear is not moved from the down and locked position.</p> <p>Flight (including enroute stops) with landing gear doors removed may be accomplished to a destination with repair capability.</p>
Landing Gear Position Indicators	3	3	
Landing Gear Warning Light	1	1	
Parking Brake	1	1	

**Table 4.12. Flight Instruments.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Heads Up Display (HUD) <sup>1</sup>	2	2	<p>One HUD may be inoperative provided: No low-level flight is performed.</p> <p>All four of the pilot Heads Down Displays (HDD) must be fully operational.</p> <p>The pilot with the inoperative HUD must have the Pilot Flight Display (PFD) selected for use in the HDD directly underneath the HUD.</p>
Pilot's Heads Down Display (HDD)	4	4	One HDD may be inoperative provided both HUDs are fully operational.
Flight Systems Officer's Heads Down Display (HDD) <sup>2</sup>	2	1	<p>One FSO HDD may be inoperative provided the following pilot HDD limitation is complied with.</p> <p>With one FSO HDD inoperative, a maximum of one pilot HDD may also be inoperative provided both pilot HUDs are fully operational</p>

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Standby Airspeed Indicator	1	1	
Standby ADI	1	1	
Standby Altimeter	1	1	
CARA	1	0	Unless mission requirements dictate.
GCAS	1	0	Unless mission requirements dictate. NOTE: An operational GCAS is required whenever more than 6 passengers are onboard.
TCAS	1	0	Unless mission requirements dictate. NOTE: An operational TCAS is required whenever more than 10 passengers are onboard.

**NOTE 1:** All flight-related symbology must be operational on the HUD and the Heads Down Display PFD.

**Table 4.13. Avionics/Navigation Systems.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Mission Computers	2	2	
Embedded Global Positioning/Inertial Navigation System (EGI)	2	1	Both EGI systems are required for Cat I routes. NOTE: Reference paragraph 4.18. for more restrictive requirements. NOTE: Ensure airspace route tolerances cannot be exceeded based on an INS CEP of 0.8 nm/hr. NOTE: The GPS portion of the EGI may not be required unless mission requirements dictate.
Avionics Management Unit	2	2	
CNI-MU Panel	3	3	One CNI-MU panel on the center pedestal may be inoperative unless required for mission accomplishment.
Comm/Nav/Breaker Panel	1	1	
Reference Set/Mode Select Panel	1	1	
Mode Annunciation Panel	2	2	
Standby Magnetic Compass	1	1	
Heading Systems	2	1	Reference paragraph 4.19. requirements

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
NAV SELECTOR Panel	2	2	
VOR	2	0	As required for navigation or approach.
ILS	2	0	As required for approach.
NDB	2	0	As required for navigation or approach.
TACAN	2	0	As required for navigation, approach, or rendezvous.
Radar	1	0	Required if thunderstorms or hazardous conditions that can be detected by airborne radar are forecast or exist along route of flight.  Reference FLIP and paragraph 4.18. of this instruction for other radar requirements associated with specific routes or areas of operation.  Required for contingency operations in a hostile environment.
IFF/SIF	1	1	(See NOTE 1)

**NOTE 1:** Perform a ground check of the IFF before takeoff, using either the self-test or ground radar interrogation. If self-test is unacceptable and radar facilities do not permit a ground check, you may take off if the IFF was operational on the previous mission. Aircraft will not depart with an IFF known to be inoperative.

**EXCEPTION:** Single aircraft must have the approval of ATC and the MAJCOM DO/XO.

**Table 4.14. Autopilot.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Autopilot	1	0	

**Table 4.15. Inflight Refueling System.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
UARRSI System	1	1	Requiring for Inflight Refueling.
UARRSI Lights	1	1	Refer to T.O. 1EC-130J-1 Loadmaster preflight for restrictions.

**Table 4.16. Aircraft Exterior and Interior Lighting.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Landing Lights	2	1	One may be inoperative provided the taxi light on same side is operational.
Taxi Lights	2	1	One may be inoperative providing the landing light on the same side is operational.
Formation Lights	9	0	Not required.
Navigation Lights	5	5	
Anti-Collision/Strobe Lights	2	2	
Wing Leading Edge Lights	2	0	

**Table 4.17. Doors and Ramp Systems.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Ramp and Ramp Locking System	1	1	<p>Warning light, latching mechanisms, and locking system will be operative for pressurized flight.</p> <p>Aircraft will not be released for flight with a malfunctioning ramp lock system, with cargo on the ramp. Aircraft may continue to destination if ramp locks malfunction in flight. Cargo ramp will not be operated in flight, with cargo on the ramp, with malfunctioning locks. Repair lock malfunction or remove cargo from ramp prior to continuing flight operations. Do not pressurize the airplane if the ramp locks fail to lock.</p> <p>Unpressurized flight, with no cargo on the ramp, may be performed with a cargo ramp lock malfunction when mission requirements dictate.</p>
Aft Cargo Door and Locking System	1	1	Pressurized flight may be performed with one aft cargo door lock malfunctioning when mission requirements dictate.
Crew Entrance Door and Warning Light	1	1	Aircraft will not be flown with a crew entrance door or crew entrance door warning light malfunction.

**Table 4.18. Enhanced Cargo Handling System.**

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Multifunction Control Display (MFCD)	1	0	Cannot perform an emergency jettison of cargo without an operational MFCD.

## Chapter 5

### OPERATIONAL PROCEDURES

**5.1. Checklists** . A checklist is not complete until all items have been accomplished. Momentary hesitations for coordination items, ATC interruptions, and deviations specified in the flight manual, etc., are authorized. Notes amplifying checklist procedures or limitations may be added to the checklists (in pencil).

5.1.1. Approved Checklist Inserts. AF and MAJCOM approved checklists, briefing guides, and approved information guides. Inserts and guides approved by the unit Stan / Eval may be placed at the end of the appropriate checklist or in an in-flight guide. All checklist inserts must have an OPR and date/version. If any crewmember has recommendations or changes they should contact the OPR. The OPR will consolidate inputs and submit changes for approval.

5.1.2. Combat Checklists developed at the unit level will be included in the unit's supplement to **Chapter 10** of this instruction. The Flight Systems Officer reads all combat checklists unless briefed otherwise by the aircraft commander.

5.1.2.1. Amplified Combat Checklists. When an amplified checklist item is followed by a crew position designator (for example "P"), that crewmember takes action and responds to the checklist challenge.

5.1.2.2. Abbreviated Combat Checklists. The checklist is a challenge and response checklist, and contain only challenge items. Crew position responses to challenge items are in quotes.

5.1.3. Amplified and abbreviated ERCC / ERO Checklists developed at the unit level will be included in the unit's supplement to **Chapter 10** of this instruction.

5.1.4. The pilot flying the aircraft will initiate all checklists.

5.1.5. Defensive systems crew coordination checklist items not applicable to the mission, training scenario, or profile being flown; need not be challenged nor responded to (e.g., CMDS - "ARMED/SAFE" if Chaff and Flares are not loaded for pilot proficiency training flights). As a minimum, verify the systems are in Standby as part of the Power Up checklist.

5.1.6. Notes amplifying checklist procedures and limitations may be added to the checklists (in pencil). Such notes must be current.

**5.2. Duty Station** . A qualified pilot will be in control of the aircraft at all times during flight.

**EXCEPTION:** Unqualified pilots undergoing qualification training and senior staff members who have completed the Senior Staff Familiarization Course). All crewmembers will be at their duty stations during all takeoffs, departures, inflight refueling, low level (below MSA), approaches, and landings. During other phases of flight, crewmembers may leave their duty stations to meet physiological needs and perform normal crew duties. Crewmembers will notify the crew area commander (e.g. Pilot, MSO, or AMS as applicable) prior to departing assigned primary duty station.

**5.3. Flight Station Entry** . Aircraft commanders may authorize passengers and observers access to the flight station during takeoff, climb, air refueling, descent, and landing only if seats with seatbelts are available. Passengers and observers will not be permitted access to the flight deck crew positions regard-

less of availability. During takeoff and landing, observers will be seated in a seat approved for use during takeoff and landing with appropriate safety belts and shoulder harnesses fastened. In all cases, sufficient oxygen sources must be available to meet the requirements of AFI 11-202, Volume 3.

5.3.1. Hold the number of persons on the flight deck to the minimum commensurate with mission requirements.

5.3.2. At no time will the number of persons on the EC-130J flight deck exceed 6.

5.3.3. The following personnel are authorized on the flight deck during takeoff, landing, and critical phases of flight.

5.3.3.1. Additional crewmembers (if seats are not required by primary crewmembers, instructors, or flight examiners).

5.3.3.2. Individuals approved by the wing or group commander.

5.3.4. Aircraft commanders may authorize passengers (except patients) to visit the flight deck during non-critical phases of flight. Passenger access to any crew position is prohibited.

**5.4. Flight Deck Congestion and Loose Objects.** Keep the flight deck area uncluttered and orderly for all flight and ground operations. Specifically:

5.4.1. Do not place any item (checklist, chart, etc.) on the center pedestal in a position that covers or hides from view any switch, light, or gauge. Do not place any item behind or on the throttle quadrant.

5.4.2. Do not store any items not required for use or immediate reference inflight on the flight deck.

5.4.3. Place only soft items on the top bunk.

**5.5. Outside Observer .** When available, use crewmembers to assist in outside clearing during all taxi operations and inflight during arrivals and departures.

**5.6. Seat Belts .** All occupants will have a designated seat with a seat belt. Use of seat belts will be as directed by the AC and **Chapter 13** of this AFI.

5.6.1. Crewmembers occupying either the pilot, or copilot seat will have seat belts fastened at all times. FSOs will have the seat belt fastened when seated with the seat in the forward position, just aft to the center pedestal.

5.6.2. All occupants will be seated with seat belts fastened during taxi, takeoff and landing.

**EXCEPTION:** Flight examiners, instructors, mission commanders, crewmembers performing scanner duties, outside observers during taxi, medical personnel performing duties, and loadmasters performing required duties during taxi, takeoffs and landing; however, they will have a designated seat and required restraint available.

**EXCEPTION:** Crewmembers may taxi without the shoulder harnesses fastened for positioning and de-positioning the aircraft.

5.6.3. Occupants will fasten seat belts securely when turbulence is encountered or anticipated, or in areas of forecast clear air turbulence.

## 5.7. Crew Bunks.

5.7.1. When the aft bunk is used for takeoff and landing on the EC-130J (CS), a crewmember, Additional Crew Members (ACM), or Mission Essential Ground Personnel (MEGP) will be on headset.

5.7.2. Crew bunks are primarily for use by crewmembers. ACM / MEGP may use them if they are not required / utilized by crewmembers during the flight.

## 5.8. Aircraft Lighting . Comply with **Chapter 4** of this AFI, AFI 11-202, Vol 3 and applicable Supplements, and all other applicable T.O.s.

5.8.1. Use taxi lights during all taxi operations. Use wingtip taxi lights during night taxi operations. Use landing lights at night in unlighted areas. Use the landing and taxi lights during night takeoffs. Use taxi lights inflight any time the landing gear is extended unless reflections cause pilot distractions in instrument conditions.

5.8.2. Use anti-collision lights or strobe lights from takeoff to landing on all flights. The PIC may turn off anti-collision lights when it's in the best interest of safety to do so. Aircraft with both anti-collision lights and strobe lights inoperative may continue to a base where repairs can be made.

5.8.2.1. Unless otherwise directed the aircraft strobe lights will be operated as follows:

5.8.2.2. "Before Starting Engines" Checklist, "RED" position.

5.8.2.3. "Before Takeoff" Checklist, "WHITE" for day.

5.8.2.4. "After Landing" Checklist, "RED" position.

5.8.3. Formation and leading edge lights should be on in addition to the anti-collision/strobe and position lights during operations below 10,000 feet. Landing lights may be used continuously during local traffic pattern training and during low altitude maneuvering in high-density traffic areas.

5.8.4. Night Vision Goggle (NVG) operations may dictate that external lights are off or infrared lenses used and internal lights be limited. Conduct training operations with reduced external lighting only within the confines of the designated restricted/warning area. Single ship aircraft will display normal aircraft lighting outside the restricted/warning area.

5.8.5. Contingency / combat operations may dictate that external lights are reduced or off and internal lights are limited to the minimum necessary for aircrew activities. Make every effort to limit flight operations under reduced lighting conditions to only those areas where the risk of flying with reduced lighting outweighs the threat risk resulting from a visual citing.

## 5.9. Communications Policy . The Air Force does not give a promise of confidentiality to aircrews regarding their recorded aircraft crew communications. Crewmembers are expected to maintain a high degree of cockpit professionalism and crew coordination at all times.

5.9.1. Sterile Cockpit. Limit conversation to that essential for crew coordination and mission accomplishment during taxi, takeoff, approach, landing, and any flight below 10,000 feet MSL (except cruise).

5.9.2. Aircraft Interphone.

5.9.2.1. Primary crewmembers will monitor interphone during critical phases of flight. Crewmembers will advise the AC prior to checking off interphone.

5.9.2.2. Do not discuss classified information on the interphone during radio transmissions.

5.9.2.3. Classified interphone or radio transmissions will be recorded on the cockpit voice recorder if it is operating. Ensure the CVR remains on and running until the tape is clear of any recorded classified conversations.

5.9.2.4. Non-aircrew members/passengers will monitor interphone or radio transmissions only when specifically approved by the aircraft commander. The aircraft commander will brief communications policy to these personnel prior to flight. The aircraft commander must ensure no one monitors classified information they are not cleared for or transmits classified information over the radios.

#### 5.9.3. Command Radios:

5.9.3.1. The pilot not flying the aircraft normally makes all air traffic control (ATC) radio calls.

5.9.3.2. The pilot operating the radios will notify the crew which radio is primary, and update the crew when the primary radio changes.

5.9.3.3. All crewmembers will monitor the primary radio unless specifically directed to do otherwise by the aircraft commander or other chapters of this instruction.

5.9.3.4. During emergencies, request simultaneous ultra-high frequency (UHF) and very-high frequency (VHF) transmissions when operating in a terminal area under radar control.

5.9.3.5. One pilot should record and will acknowledge all ATC clearances. The flight systems officer will record the clearance and monitor the read back including all transmissions pertaining to ATC instructions involving departure, en route, and approach procedures. Disregard this procedure when air traffic ATC instructions require immediate execution, or when such action interferes with timely completion of more important duties.

5.9.3.6. Both pilots and the flight systems officer will monitor UHF guard (or VHF guard when appropriate) emergency frequency regardless of primary radio, with the exception of inflight refueling operations.

5.9.3.7. Normally the flight systems officer will monitor ATC and UHF guard (or VHF guard when appropriate) emergency frequencies regardless of the primary radio after completion of the inflight refueling rendezvous, until the termination of air refueling operations.

5.9.3.8. In terminal areas the pilot, copilot, flight systems officers, and loadmaster (if able) will monitor the command radio unless directed otherwise. A designated crew member should monitor C2 frequencies (if applicable) on the inbound and outbound leg, unless otherwise directed.

#### 5.9.4. Crew Resource Management (CRM) Assertive Statement "Time Out":

5.9.4.1. "Time Out" is the common assertive statement for use by all crew members. The use of "Time Out" will:

5.9.4.1.1. Provide a clear warning sign of a deviation or loss of situational awareness.

5.9.4.1.2. Provide an opportunity to break the error chain before a mishap occurs.

5.9.4.1.3. Notify all crew members that someone sees the aircraft or crew departing from established guidelines, the briefed scenario, or that someone is simply uncomfortable with the developing conditions.

5.9.4.2. As soon as possible after a "Time Out" has been called, the aircrew will take the following actions:

5.9.4.2.1. Safety permitting, stabilize the aircraft.

5.9.4.2.2. The initiating crew member will voice his or her concerns to the crew.

5.9.4.2.3. The AC will provide all other crewmembers with the opportunity to voice inputs relative to the stated concerns.

5.9.4.2.4. After considering all inputs, the AC will direct the aircrew to continue the current course of action or direct a new course of action.

**NOTE:** The AC is the final decision authority.

**5.10. Advisory Calls:** The pilot flying will periodically announce intentions during departures, arrivals, approaches, and when circumstances require deviating from normal procedures. Mandatory advisory calls are: (The pilot not flying the aircraft will make these calls except those designated for any crewmember).

5.10.1. Takeoff. During takeoff roll, the pilot not flying the aircraft will state "GO" at refusal speed or takeoff speed, whichever is lower. Any crewmember noting a safety of flight malfunction before hearing "GO" will state "REJECT" and a brief description of the malfunction (e.g., "Reject, number two engine flameout.").

5.10.2. During touch and go landings the non-flying pilot will state "ROTATE".

5.10.3. Altitude calls:

5.10.3.1. 1000 feet above initial approach fix (IAF) (or holding) altitude.

5.10.3.2. Transition altitude/level.

5.10.3.3. One thousand feet above/below assigned altitude.

5.10.3.4. One hundred feet above/below assigned altitude to include minimum descent altitude/decision height (MDA/DH).

5.10.4. Approaches:

5.10.4.1. Call one hundred feet above procedure turn, final approach fix (FAF), MDA, or DH altitude.

5.10.4.2. Non-precision approaches.

5.10.4.2.1. "One hundred feet above" minimum altitudes.

5.10.4.2.2. "Minimums" when reaching MDA.

5.10.4.2.3. "Runway in sight." Make this call when the runway environment is in sight. Do not call too soon when obstructions to vision, such as fog, haze, low stratus clouds, etc., are present.

5.10.4.2.4. "Go-around." Call at the missed approach point if the runway environment is not in sight or if the aircraft is not in a position for a safe landing.

5.10.4.3. Precision approaches.

5.10.4.3.1. One hundred feet above decision height (DH).

5.10.4.3.2. "Land." Make this call at the DH if runway environment is in sight and the aircraft is in a position for a normal landing.

5.10.4.3.3. "Go-around." Make this call at DH if the runway environment is not in sight or if the aircraft is not in a position for a safe landing.

5.10.5. Climb out:

5.10.5.1. Transition altitude.

5.10.5.2. One thousand feet below assigned altitude.

5.10.6. Descent:

5.10.6.1. Transition level.

5.10.6.2. One thousand feet above assigned altitude.

5.10.6.3. One thousand feet above initial approach fix altitude or holding altitude.

5.10.6.4. One hundred feet above procedure turn and final approach fix altitude.

5.10.7. Deviations.

5.10.7.1. The pilot not flying the aircraft will tell the other pilot when heading or airspeed deviations are observed or altitude is more than 100 feet from desired, and no attempt is being made to correct the deviation.

5.10.7.2. Any crewmember seeing a variation of 200 feet altitude, a deviation of +/- 10 knots in airspeed or a potential terrain or obstruction problem will immediately notify the pilot. Deviations from prescribed procedures for the approach being flown will also be announced.

## 5.11. Runway, Taxiway and Airfield Requirements.

5.11.1. For mission accomplishment, if approach end overruns are available and stressed or authorized for normal operations, they may be used to increase the runway available for takeoff. Departure end overruns (if stressed and authorized) may also be used for landing if needed. Consult with HQ AMC/DOA (Airfield Analysis Branch) for suitability guidance.

5.11.2. Aircrews and planning agencies will contact HQ AMC/DOA for all questions pertaining to airfield weight bearing capability and will review the ASRR prior to all off-station operations. The wing commander or COMAFSOF is the waiver authority for all airfield restrictions. Waivers must be obtained prior to mission execution. Although a waiver may be approved, the AC is still responsible for determining airfield suitability based upon operational need. See the ASRR for airfield certification requirements.

5.11.3. Runway Length for Takeoff. Minimum runway length for a normal take off is critical field length.

5.11.3.1. Runway Length for Landing. Minimum runway for a normal landing is landing distance from 50 feet over the threshold, plus the RVR/visibility correction factor specified in [Table 5.2](#).

5.11.4. RCR Limitations. When no RCR is available, refer to the flight manual for standard ICAO conversions based on general runway condition. Be conservative when dealing with unknown conditions (e.g., FOBs, unpaved runways). Normally, RCR values are not reported for taxiways and ramps. During periods of reported low RCR, the taxiways and ramps may have an even lower RCR than

reported for the runway. Consider the runway surface wet when water on the runway causes a reflective glare.

5.11.4.1. Runway Condition Reading (RCR) and Runway Surface Condition (RSC). The performance charts used to determine braking action are based on concrete runways. The RCR values for the following runway surfaces depicted in [Table 5.3](#), are estimates based on operational experience and should be used only as a guide.

5.11.4.2. Limit EC-130J operations into and out of slush or water covered runways to a covering of one inch. This number is based on performance charts where an RSC of 10 is equal to one inch of slush or water. Performance data where more than one inch of slush or water is present may not be accurate.

**Table 5.1. Minimum Runway/Taxiway Width Requirements.**

<b>Runway Length</b>	
Full Stop	5000 Feet
Touch and Go	6000 Feet
<b>Runway Width</b>	
Normal Operations	80 Feet / 25 Meters
Minimum	60 Feet / 19 Meters
<b>Taxiway Width</b>	
Normal Operations	30 Feet / 9 Meters

**Table 5.2. RVR/Visibility Correction Factors.**

<b>RVR (Visibility)</b>	<b>Add to Landing Distance</b>
Less than 40, (3/4)	1,000 feet.
Equal to or greater than 40, (3/4)	500 feet.

## **5.12. Aircraft Taxi Procedures and Taxi Obstruction Clearance Criteria**

5.12.1. Without wing walkers, avoid taxi obstructions by at least 25 feet. With wing walkers, avoid taxi obstructions by at least 10 feet.

**EXCEPTION:** Per AFI 11-218, aircraft may taxi without marshalers/wing walkers at home station along locally established taxi lines, which have been measured to ensure a minimum of 10 feet clearance from any obstruction.

5.12.2. When taxi clearance is doubtful, use one or more wing walkers. If wing walkers are unavailable, deplane one or more crewmembers to maintain obstruction clearance and provide marshaling. Use AFI 11-218 signals. The AC should use wing walkers, deplaned crewmembers, or a crewmember on interphone positioned at the paratroop door(s) to act as an observer while maneuvering on narrow taxiways. During night taxi operations, marshalers will have an illuminated wand in each hand. Observers should be in a position to see wing walkers at all times (through door or windows) and communicate with the pilot.

**Table 5.3. RCR Values.**

TYPE SURFACE	RCR (DRY)	RCR (WET)
Asphalt	23	12
M8A1/With Anti-Skid (PSP)	20	8
M8A1/Without Anti-Skid (PSP)	13	3

**5.13. Foreign Object Damage (FOD) Avoidance .**

5.13.1. Make every effort to minimize the potential for engine FOD. Crews should:

5.13.1.1. Carefully review airfield layout during mission planning. Be familiar with taxi routes, turn requirements, and areas for potential FOD.

5.13.1.2. Minimize power settings during all taxi operations.

5.13.1.3. Use low speed ground idle whenever possible.

5.13.2. After landing and clearing the runway, and with approval of the pilot, the loadmaster may open the aft cargo door and lower the ramp to approximately 12 inches above horizontal to prepare for cargo off/onload provided equipment, cargo, and passengers remain secure in the cargo compartment.

**5.14. Reverse Taxi:**

5.14.1. The pilot will coordinate reverse taxi directions and signals to be used with the loadmaster and marshalers (when available).

5.14.2. Secure all cargo and ensure all passengers are seated.

5.14.3. Open the aft cargo door and lower the ramp to approximately 12 inches above horizontal.

5.14.4. The loadmaster will be on the aircraft ramp in the best position to direct reverse taxi, report any hazards, and to provide the pilot with timely interphone instructions on turns, distance remaining, conditions of the maneuvering area, and stopping point.

5.14.5. Stop no less than 25 feet from an obstruction even if using a wing walker.

5.14.6. During night reverse taxi operations, the pilot and loadmaster will ensure the taxi area is sufficiently lighted.

**5.15. Arresting Cables.** The EC-130J will not takeoff or land on a runway with raised approach or departure end arresting gear (does not include recessed cables), unless the following criteria are met:

5.15.1. Aircraft may begin takeoff roll immediately past the approach end arresting gear, provided takeoff data is computed using the actual runway remaining.

5.15.2. Unless departure end arresting gear is removed, takeoff data will not be computed using runway length extending beyond departure end arresting gear/barrier cables. The unit OG/CC may waive this restriction.

5.15.3. Do not land on or prior to approach end arresting cables, and ensure the usable runway length beyond the cable meets the minimum runway length requirement for the EC-130J.

5.15.4. Do not land on a runway with a departure end arresting cable, unless the runway length available prior to the cable meets the minimum runway length requirements for the EC-130J.

## **5.16. Takeoff and Landing Obstruction Criteria**

5.16.1. The mission directive is confirmation that AFSOC/CC, or COMAFSOF with area jurisdiction, has reviewed the airfields of intended operation for obstructions and other hazards IAW Air Force and AFSOC directives. The wing or COMAFSOF will advise crews of known obstructions and other factors that could be hazardous to airland operations. Aircraft commanders will not make an approach and landing into an airfield requiring certification by the ASRR unless they have previously operated into that airfield as a pilot, copilot, or observer and have reviewed the airfield certification briefing and audiovisual program within the last 14 days. See paragraph 6.7. for additional ASRR guidance. Waiver authority for the ASRR rests with the HQ AFSOC/DO.

5.16.2. An airfield is considered suitable for C-130 operations when:

5.16.2.1. No obstructions penetrate into the shaded area of **Figure 5.1**. This ensures clearance only if the aircraft is maintained within 35 feet of runway centerline and a bank of five degrees is not exceeded.

5.16.2.2. When an obstruction penetrates the shaded area of **Figure 5.1**, specific approval by the wing or group commander, or COMAFSOF with area jurisdiction is required and the aircraft commander must be advised of the height and location of the obstructions as well as specific procedures to avoid the obstacles (i.e., landing beyond the obstacles).

Figure 5.1. Takeoff and Landing Obstruction Clearance.

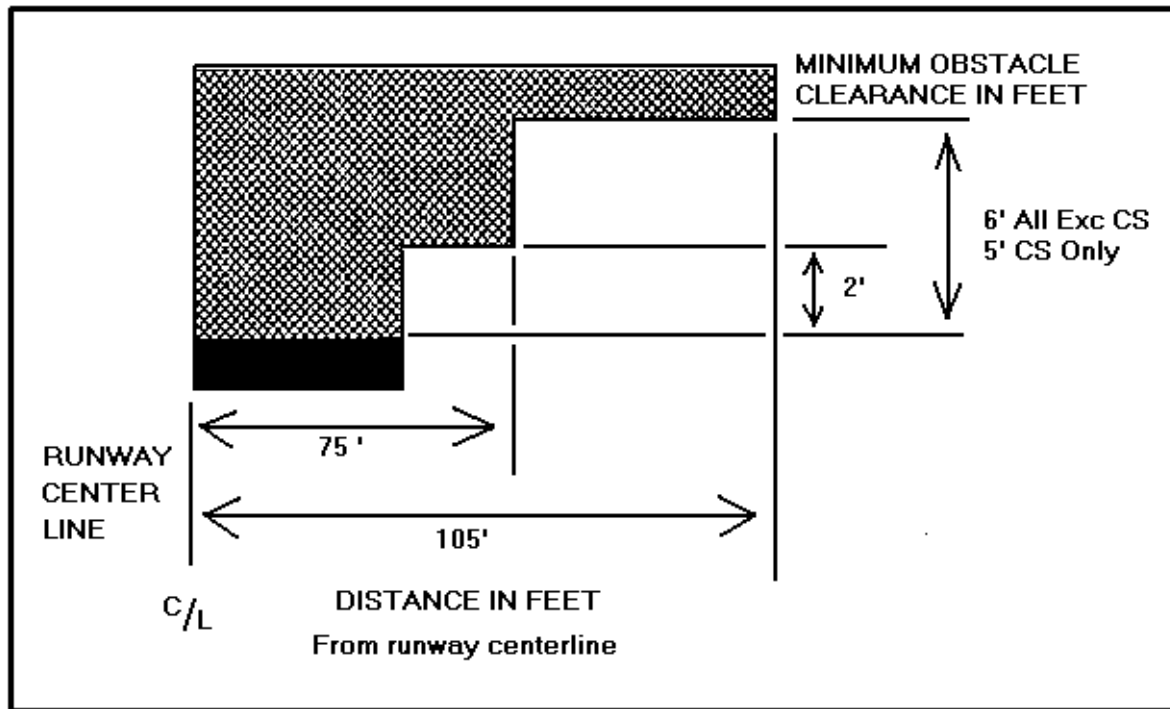
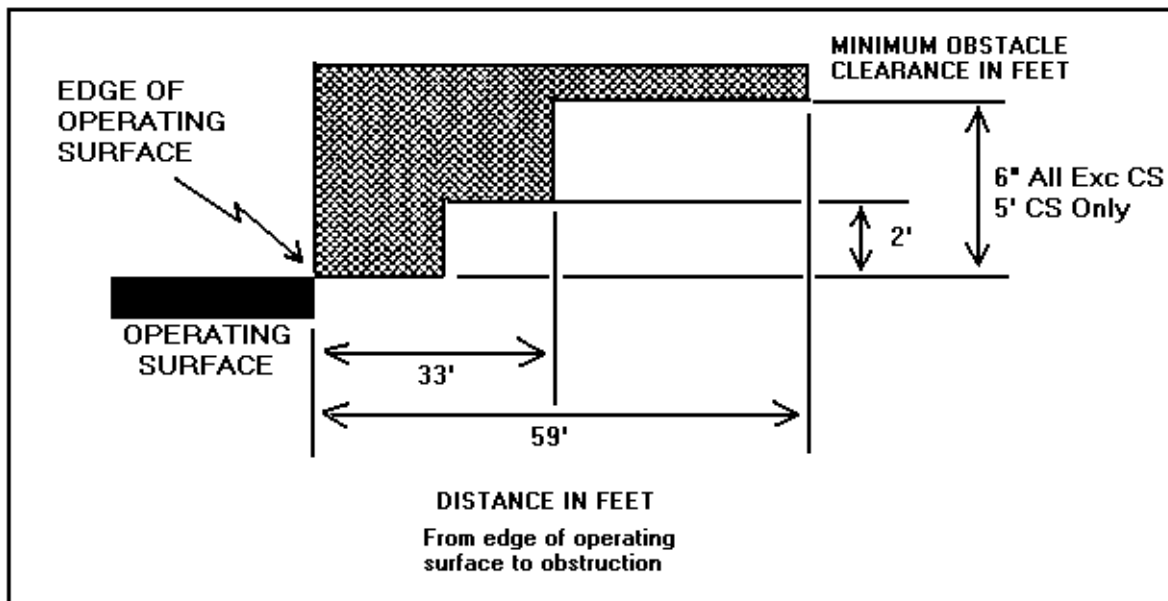


Figure 5.2. Ground Operations Obstruction Clearance Criteria.



5.16.3. [Figure 5.2.](#) provides obstruction clearance criteria for ground operations. It depicts minimum obstacle clearance with the main landing gear on the edge of the operating surface. Aircraft commanders will be advised of any known obstructions that penetrate the shaded area of [Figure 5.2.](#)

**5.17. Wind Restrictions and RCR Limitations:** A current landing zone (LZ) survey (within the past five years as specified in AFI 13-217) is needed prior to using other than hard-surfaced runways or taxiways. MAJCOM DO/XO may waive runway/taxiway width requirements. Minimum runway and taxiway widths for normal operations are depicted in [Table 5.1](#).

**5.18. Landing Gear and Flap Operating Policy.** The pilot not flying will operate the landing gear and flaps. Actuate the landing gear or flaps only after command of the pilot flying the aircraft. Prior to actuation of the landing gear or flaps, the pilot not flying will acknowledge the command by repeating it.

5.18.1. Reduced Power Operations. Takeoffs will normally be made using reduced power. Values listed below are the minimum required. Other power settings may be used as mission requirements dictate or permit.

5.18.2. Reduced power operations for normal takeoffs and takeoffs from stop/touch-and-go landings will use (a horsepower setting not yet determined). Power settings up to maximum power may be used during stop-and-go takeoffs to comply with training restrictions listed in this instruction. Maximum continuous power (4,691 +/- 74 HP) should be used to takeoff and climb to cruise altitudes.

**5.19. Intersection Takeoffs.** Normally, initiate takeoffs from the beginning of the approved usable portion of the runway. The decision to make intersection takeoffs rests solely with the aircraft commander. Base TOLD card computations on the runway remaining at the point the takeoff is initiated.

**5.20. Stop and Go Landings.** Stop-and-go landings will not be accomplished in the EC-130J (CS) or mission configured EC-130J (SJ) aircraft. Refer to [Chapter 9](#) of this instruction for training restrictions associated with Stop-and-Go landings.

**5.21. Traffic Collision Avoidance System (TCAS).**

5.21.1. It is imperative to follow resolution advisories (RA) to obtain aircraft separation computed by TCAS. Failure to follow the computed RA may increase the probability of a midair collision. If possible, visually clear the airspace before maneuvering the aircraft in response to a TCAS advisory.

5.21.2. Advise ATC as soon as practical when a deviation becomes necessary due to a TCAS resolution advisory (RA).

5.21.3. A functional TCAS is required whenever more than 10 passengers are onboard the aircraft. MAJCOM/DOV is the waiver authority for this requirement.

**5.22. Radar Altimeter.**

5.22.1. Any crewmember detecting the illumination of the radar altimeter Low Altitude warning will immediately notify the pilot flying the aircraft. Terrain clearance and aircraft position must be verified.

5.22.2. Prior to departure set the radar altimeter for emergency return. Normally, use the HAT/HAA for IMC, or 500 feet for VMC departures.

5.22.3. The radar altimeter will be set to the HAT/HAA during instrument approaches.

**5.23. GCAS (Ground Collision Avoidance System).** The following escape maneuvers and flight crew procedures apply to aircrews flying aircraft equipped with GPWS or GCAS.

5.23.1. When at night or in IMC, and an aural (either a partial or full "Whoop Whoop - Pull Up") and the "Pull Up" annunciator light warning is illuminated, the following escape maneuver will be accomplished.

5.23.1.1. Departure/Approach. Immediately and simultaneously rotate the aircraft to at least 7 degrees pitch-up, roll wings level and add maximum power to alter the aircraft's flight path until the warning has ceased and adequate terrain clearance is verified. If required, rotate the aircraft to maintain a maximum climb angle (flaps up: no less than flaps-up approach speed, flaps 50 or 100 percent: no slower than obstacle clearance speed).

5.23.1.2. Enroute. Immediately and simultaneously rotate the aircraft to at least 7 degrees pitch-up, roll wings level and add maximum power to alter the aircraft's flight path until the warning has ceased and adequate terrain clearance is verified. If required, rotate the aircraft to maintain a maximum climb angle (flaps up: no less than 160 KIAS, flaps 50 or 100 percent: no slower than 130 KIAS).

**WARNING:** Do not delay pull-up for diagnosis of the low altitude warning.

**WARNING:** Crewmembers will back up the pilot who is performing the escape maneuver. The pilot not flying the aircraft will confirm escape maneuver is being properly flown and will use all available means (i.e., nav aids, radar) to verify altitude and ensure terrain clearance.

**WARNING:** Failure to roll wings level prior to slowing to the prescribed speeds above will decrease stall margin at heavy aircraft gross weights.

**NOTE:** When flaps are 100 percent, consider raising the flaps to 50 percent once a positive rate of climb is established and appropriate airspeed exists to decrease drag and increase climb profile. Likewise, when flaps are up, consider lowering the flaps to 50 percent to increase lift and the stall margin. Accomplishing these steps parallels normal go-around flap operation procedures.

5.23.2. For operations in day VMC conditions, with terrain and obstacles clearly in sight, the pilot flying the aircraft will call runway and/or terrain in sight, state intentions and visually clear terrain.

5.23.3. Ensure the proper mode of the GPWS/GCAS is commensurate with the aircraft's phase of flight.

5.23.4. A functional GCAS is required whenever more than 6 passengers are onboard the aircraft. MAJCOM/DOV is the waiver authority for this requirement.

## **5.24. Enroute Cruise Policy .**

5.24.1. To the maximum extent possible, both pilots will be at the flight controls during oceanic route segments.

5.24.2. The Aircraft Commander will check destination and alternate weather prior to the ETP on all flights requiring inflight fuel management or when inflight fuel is critical.

5.24.3. Mission permitting, monitor the following radio frequencies overwater: VHF – 121.5 MHz, UHF - 319.4 MHz, 243.0 MHz, or as assigned, and HF - as assigned.

**5.25. EC-130J (CS) Trailing Wire Antenna Operations.**

5.25.1. If the vertical trailing wire antenna is to be deployed, the crew will coordinate with the air-space-controlling agency to secure a block altitude.

5.25.2. The trailing wire antennas will not be deployed overland, except for contingency operations. If antennas are deployed overwater, they will be secured before departing an overwater orbit area. Antenna deployment and retraction will be briefed as a separate item under mission requirements.

5.25.3. Aircrew VTWA procedures.

5.25.3.1. The MSO will coordinate VTWA operations with the pilot prior to deployment of the VTWA.

5.25.3.2. The VTWA operator will request clearance to Retrieve the VTWA.

5.25.3.3. The MSO will coordinate with the AC prior to retrieving the VTWA.

5.25.3.4. The pilot/copilot will hand fly the aircraft (autopilot OFF) during retrieval operations.

5.25.3.5. The TW operator will retrieve the VTWA as published in the flight manual with the following exceptions.

5.25.3.5.1. If a turn is required during retrieval with the wire less than 50 feet, the TW operator will deploy the VTWA to 50 feet until the turn is complete. Retrieval operations may continue after completing the turn. This procedure requires coordination between the AC, MSO, and TW operator.

5.25.3.5.2. Wire lengths of 1.5 feet or less do not need to be extended back out to 50 feet. Docking sequence may continue.

**5.26. Fuel Planning.** Use the appropriate fuel planning publication or technical order (T.O.) specified in **Chapter 12** of this instruction for fuel planning. While flying at long-range cruise at the cruise ceiling is the most conservative method and therefore encouraged, aircraft commanders may elect to fly at other speeds and altitudes deemed appropriate for the mission.

5.26.1. Required fuel for an Air Refueling abort. Plan to have sufficient usable fuel onboard prior to any planned inflight refueling to complete flight to the planned End Air Refueling point and then land at a suitable abort airfield if the refueling is not successful

5.26.2. Required Fuel at Destination. The minimum fuel overhead destination or alternate is normally 6,000 pounds. See **Chapter 12** for additional more restrictive requirements. Always land with a minimum of 4,000 pounds fuel remaining.

5.26.3. Fuel Conservation. Make every reasonable effort to conserve fuel. Some recommended methods are:

5.26.3.1. Cruise at optimum altitude. Step climb if practical.

5.26.3.2. Fly missions at the most fuel conservative cruise speed option. On missions that are time rather than distance oriented, consider flying the maximum endurance cruise option. Aircraft commanders are encouraged to fly long-range cruise airspeeds on other missions if practical.

5.26.3.3. When operating the EC-130J (CS) fly the most economically feasible cruise schedule, normally 290 KTAS at the ATC cruise ceiling (260 KTAS if below 10,000 MSL), or as restricted by the aircraft configuration or operational necessity.

5.26.3.4. When operating the EC-130J (SJ), except for operational necessity, fly the most economically feasible cruise schedule for existing conditions. Fly 310 KTAS at the ATC cruise ceiling (260 KTAS if below 10,000 MSL), or as restricted by aircraft special mission configurations or operational necessity.

5.26.3.5. Use low speed ground idle or two-engine symmetrical power when practical for ground operation.

5.26.4. Cruise at the altitude that gives the best ground distance traveled for each pound of fuel consumed. As a rule of thumb, climb if ground speed is reduced less than 5 knots for each 1,000 feet of altitude increase. Descend if ground speed will increase more than 5 knots for each 1,000 feet of altitude decrease. Do not fly above the cruise ceiling.

**5.27. Fuel Jettison Procedures** . Fuel jettison is limited to the minimum necessary for safe and effective flight operations. Except in the case of an emergency, prior to jettisoning fuel, crews will notify the appropriate ATC or flight service facility of intentions, altitude, and location. Inform the appropriate ATC or flight service facility when the operation is complete.

5.27.1. Jettison fuel only under the following circumstances:

5.27.1.1. Aircraft emergency. Immediate reduction of gross weight is critical to safe recovery of the aircraft.

5.27.1.2. Urgent operational requirements. Immediate reduction of gross weight is necessary to meet urgent operational mission tasking.

5.27.2. Units will establish jettison areas and procedures to minimize the impact of fuel jettisoning into the atmosphere.

5.27.2.1. Designate jettison areas off published airways and avoid urban areas, agricultural regions, and water supply sources.

5.27.2.2. Avoid circling.

5.27.3. Use jettison altitudes of 5,000 feet AGL or higher to the maximum extent possible.

5.27.4. Use designated jettison areas to the maximum extent possible, except when safety of flight would be compromised.

5.27.5. If jettison is accomplished, record all pertinent data to include flight conditions, altitude, airspeed, air temperature, wind direction, and velocity, type and amount of fuel, aircraft type and position at time of jettison, time and duration of jettison activity, and reason jettison was accomplished. Retain this information for 6 months as documentation in the event of claim against the government resulting from the fuel jettison.

**5.28. Arrival.** Plan arrival altitudes to minimize the threat. When more than one aircraft is involved, consider using multiple altitudes and traffic patterns to prevent predictable targeting by the enemy.

**5.29. Traffic Pattern.** Fly normal traffic patterns when the environment permits. Hostile activity or terrain may require significant modifications to normal traffic patterns. Options are to enter the traffic pattern via an initial, downwind, base, straight in, or perpendicular to the runway. During hostile activity, the pilot can control several factors that may reduce the time in a threat envelope. These are altitude, arrival and departure flight path, proximity to the airfield, and proximity to known threats. The approach must be unpredictable. Comprehensive mission planning and knowledge of the threat location, density, and capability will dictate the specific tactics to be employed. The recommendations below are some examples; however, ingenuity is the key in determining what type of approach to fly.

**5.30. Random Approaches:**

5.30.1. Random steep approach. This maneuver is based on a modified 360-degree overhead approach to a normal landing. Conditions may require that the example random steep approach described below be modified to satisfy local conditions.

5.30.1.1. Establish initial at approximately 4,500 feet above ground level (AGL) or 4,000 feet multiples above (8,500 feet AGL, etc.) and accomplish the before landing checklist.

5.30.1.2. When approximately one-third of the distance down the runway, extend 100 percent flaps and commence descent while beginning a 360 degree turn to final. On final airspeed can be reduced to threshold speed.

5.30.1.3. Maintain 140 knots indicated airspeed (KIAS) or approach speed, whichever is higher, until wings level on final. Plan the approach to remain within two miles of the airfield and to enter no less than a ¼ mile nor more than a one-mile final. The maneuver can be modified to enter on other than an initial; i.e., 270 or 90-degree overhead. In these cases, change the initial altitude according to the pilot's judgment.

5.30.2. Random shallow approach. These maneuvers are based on approaching the airfield from various directions at low en route altitude (Circling Minimums for Training) and en route airspeed with the descent/before-landing checklist accomplished.

5.30.2.1. Begin a level slowdown maneuvering to approach speed at a predetermined point. Plan the approach to avoid repositioning the flaps while turning. While remaining at low altitude, maneuver the aircraft to enter a point on final no less than ¼ mile from the runway, accomplish the before landing checklist, and complete the landing IAW the flight manual. Once aligned on final airspeed may be reduced to threshold speed.

5.30.2.2. The pilot may elect to make a climbing slowdown to normal traffic pattern altitude if the threat situation permits.

**5.31. Portable Electronic Devices.** Comply with AFI 11-202, Vol 3.

**5.32. Hand-Held GPS.** Comply with AFI 11-202, Vol 3 and paragraph 4.20.8. of this instruction.

**5.33. Aircraft Recovery From Unprepared Surfaces.** Aircrews will normally not attempt to recover an aircraft after inadvertent entry onto unprepared surfaces not suitable for taxi. Using the appropriate equipment, ground crews will accomplish aircraft recovery. Unless an emergency situation dictates otherwise, aircrews may accomplish recovery only if there is no aircraft damage, the surface will support the aircraft,

and the AC has coordinated with appropriate MAJCOM headquarters maintenance authorities through the TACC (ANGRC/XO for ANG aircraft or missions and as specified in other MAJCOM guidance).

**5.34. BASH Programs.** BASH programs are centralized unit efforts that provide information cross-feed, hazard identification, and a consolidated course of action. As a minimum, units must implement the following procedures:

5.34.1. Ensure compliance with the following Bird Watch condition restrictions.

5.34.1.1. Bird Watch Condition Low - No operating restrictions.

5.34.1.2. Bird Watch Condition Moderate - Initial takeoffs and final landings allowed only when departure and arrival routes will avoid bird activity. Local IFR/VFR traffic pattern activity is prohibited.

5.34.1.3. Bird Watch Condition Severe - All takeoffs and landings are prohibited. Waiver authority is the OG/CC or equivalent.

5.34.2. Make every effort to not schedule takeoffs, landings, and low-altitude flights from one hour before to one hour after sunrise and sunset during the phase II period. Also, significant bird hazards will be published in FLIP GP and the IFR Supplement along with the associated airfield operating hour restrictions and avoidance instructions.

5.34.3. All AFSOC units will have a BASH Reduction Plan in accordance with AFI 91-202.

5.34.4. When operating at airfields where no BASH program exists, AC's have the authority to delay takeoffs and arrivals due to bird condition. Coordinate actions through appropriate C2 agencies.

**5.35. Functional Check Flights (FCFs) and Acceptance Check Flights (ACFs)** . FCFs and ACFs will be performed according to T.O. 1-1-300 and applicable MAJCOM instruction. Additional guidance can be found in T.O. 1C-130J-6CF-1, AFI 21-101, ANGI 21-101 (ANG units only), including all applicable supplements and unit directives.

**5.36. Participation in Aerial Events.** (IAW AFI 11-209 and MAJCOM supplement). Aerial events must be sanctioned and individually approved by the appropriate military authority, and dated with the FAA. AFI 11-209 clearly identifies events sanctioned for support, and specifies the approval authority for each type. In addition, it stipulates that units participating in aerial events will ensure activities are coordinated with the FAA through the regional Air Force representative.

**5.37. Smoking Restrictions.** Smoking on the aircraft is not authorized.

**5.38. Transportation of Pets** . Transporting pets (dogs and cats) on aircraft in conjunction with the sponsor's permanent change of station is authorized. Other pets or animals are normally prohibited, but may be moved according to DOD-R 4515.13.

**5.39. Alcoholic Beverages** . MAJCOM DO/XO may authorize the dispensing of alcoholic beverages to passengers inflight.

**5.40. Engine Running Crew Changes (ERCC).** During local training missions ERCCs are authorized provided the enplaning crew does not approach the aircraft until the deplaning loadmaster is on headset

and in position outside the aircraft. Keep ERCCs to the absolute minimum necessary to accomplish training. ERCC procedures are not normally accomplished for operational missions. See the unit's supplement to **Chapter 10** of this AFI for expanded and abbreviated ERCC / ERO (Engine Running Onload or Offload) Checklists.

**5.41. Engine Running Onload and Offload (ERO).** Do not use ERO procedures when explosive cargo is involved unless authorized by the exercise operation order or contingency air tasking orders (ATO).

5.41.1. The ERO procedures in this paragraph may be used when any mix of personnel or cargo are Onloaded/Offloaded while the engines are running. The aft cargo door and ramp is preferred when more than 10 passengers are involved. Aircraft commanders will assess prevailing weather, lighting, and parking location to ensure a safe operation. Flying units will publish expanded and abbreviated ERCC / ERO checklist as attachment to their supplement to **Chapter 10** of this instruction.

5.41.2. General Procedures:

5.41.2.1. Aircraft commanders will brief crewmembers on the intended ERO operation, emphasizing specific crewmember duties.

5.41.2.2. The parking brake will be set and one pilot will monitor brakes, interphone, and radio.

5.41.2.3. Operate engines in the Hotel mode or ground idle (low speed, if applicable). If conditions warrant, and lower flaps to reduce prop or jet blast aft of the aircraft.

5.41.2.4. Turn wing leading edge lights on during night ERO. Taxi lights may be used at the discretion of the aircraft commander.

5.41.2.5. Complete non-aircrew member and cargo manifests, crew lists, and DD Form 365-4, **Weight and Balance Form F-Transport**, for the subsequent sortie.

**NOTE:** The DD Form 365-4 is not required for subsequent sorties if the aircraft departs empty.

5.41.2.6. Resume taxi after the door warning light is out and when the LM has verbally acknowledged that the aircraft is ready for taxiing.

5.41.2.7. Do not onload or offload through the crew entrance door and ramp, or paratroop doors at the same time.

5.41.3. Personnel onload and offload through the crew entrance door

5.41.3.1. During enplaning and deplaning, station a crewmember (normally the LM) on interphone (cord held taut) approximately 25 feet and at a 45-degree angle from the aircraft axis.

5.41.3.2. Brief deplaning personnel to remain forward of the interphone cord.

5.41.3.3. The aircraft commander will give clearance to open the crew entrance door.

**CAUTION:** Due to hazards involved (i.e., prop blast, proximity to engines or props, lack of paratroop door steps), the paratroop doors should not be used during EROs. Small hand transferable items of cargo may be on or offloaded through the crew entrance door during EROs.

5.41.4. Personnel or cargo onload and offload through the aft cargo door and ramp.

5.41.4.1. After clearance from the pilot, open the aft cargo door, and lower the ramp as required.

5.41.4.2. The loadmaster will direct all onload and offload operations. Passengers will be escorted by a crewmember when enplaning or deplaning. Deplane passengers before cargo and enplane passengers after cargo unless cargo size or location dictates otherwise.

5.41.4.3. After the aircraft is slowed to taxi speed, the loadmaster may remove all tie downs except one forward and one aft restraint. Remove remaining restraints only after the aircraft is stopped and vehicle drivers are in place. Brief drivers not to release vehicle-parking brakes until all restraint is removed and cleared by the loadmaster.

5.41.4.4. The loadmaster will direct all onload and offload operations using pre-briefed signals. Other qualified loadmasters may direct the operation if available, but the crew loadmaster retains overall responsibility for the operation.

5.41.4.5. Station the crew loadmaster or another crewmember (normally the FSO) on interphone and public address (PA) in the cargo compartment as a safety observer. Safety observers other than the loadmaster will remain forward of all cargo.

**5.42. Alert Aircraft.** Maintain aircraft on alert status IAW the following:

**NOTE:** HQ AFSOC/DO is the waiver authority for paragraph 5.42.

5.42.1. Park the aircraft in a designated alert parking area when possible to expedite taxi and takeoff.

5.42.2. Whenever operationally feasible, have a crew other than the alert crew preflight the alert aircraft. If this is not feasible, follow procedures outlined in paragraph 3.8.5. It is the intent of this procedure to allow the alert period and aircraft preflight validity period to be aligned. This should prevent the need to update the preflight during the alert period.

5.42.3. The alert aircraft may be flown for purposes other than actual alert missions provided the following conditions are met:

5.42.3.1. Alert requirements can be met with sufficient fuel to meet mission requirements.

5.42.3.2. Communication contact is maintained with the primary controlling agency.

5.42.3.3. Controlling agencies are notified any time the alert aircraft departs the local area.

5.42.3.4. The provisions of paragraph 3.8.6.2. are followed.

5.42.3.5. If maintenance actions are not required, the aircraft can be resealed for alert once the through flight inspection is completed. A new flight crew preflight is not required until the end (72 hours) of the initial preflight period.

5.42.4. A DD Form 365-4 will be prepared for the alert aircraft. Alert crews are authorized to prepare an AF Form 4040, **C-130 Takeoff and Landing Data (TOLD) Card** using the worst weather conditions expected for the alert period. Use the data for alert scrambles. If the alert aircraft is flown for other reasons, use AF Form 4040 for the existing weather conditions.

5.42.5. When preflighted alert aircraft changes or an alert crew change occurs and the same aircraft remains on alert, the oncoming crew will, as a minimum, apply power to the aircraft and check applicable items listed below:

5.42.5.1. AFTO Form 781, **ARMS Aircrew/Mission Flight Data Document**.

5.42.5.2. Interior and exterior for proper configuration and special equipment.

5.42.5.3. Fuel quantity.

5.42.5.4. Survival and emergency equipment.

5.42.5.5. Navigation and communication equipment.

5.42.5.6. Liquid oxygen quantity (if applicable).

5.42.5.7. Hydraulic reservoirs, gearboxes (if applicable) and accumulator charges.

5.42.5.8. Publications.

5.42.6. Should the aircraft remain on alert for more than 72 hours, a complete aircrew preflight is then required.

5.42.7. Once the aircraft is accepted for alert, the loadmaster will ensure an entry is made in the AFTO Form 781 stating as a minimum the date and time the aircraft was preflighted.

5.42.8. Consider alert aircraft off-limits to all personnel except alert crewmembers. No maintenance may be performed on the aircraft without approval of the unit/mission commander. Upon being told to launch, the crew is required to check the area in which maintenance was performed, prior to flight.

## Chapter 6

### AIRCREW PROCEDURES

#### *Section 6A— Pre-Mission*

##### **6.1. Aircrew Uniform.**

6.1.1. Wear the aircrew uniform, as outlined in AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*, on all missions, unless otherwise authorized. When the Foreign Clearance Guide (FCG) requires civilian attire, wear conservatively styled civilian clothing. The FCG is available at <http://www.fcg.pentagon.mil> and <http://www.fcg.pentagon.smil.mil>

6.1.2. Each group commander will determine clothing and equipment to be worn or carried aboard all flights commensurate with mission, climate, and terrain involved.

6.1.3. All aircrew members will have Nomex flight gloves readily available during all flights and will wear them for takeoffs, landings, and when operating in a combat environment. The wearing of Nomex gloves is recommended during other critical phases of flight.

6.1.4. Crewmembers will remove rings and scarves prior to performing aircrew duties in, or around, the aircraft.

6.1.5. Personnel will have the appropriate items of clothing in their possession when flying in Arctic and Antarctic regions.

**EXCEPTION:** Not applicable to transoceanic flights.

6.1.6. See AFI 10-403, *Deployment Planning*, for mobility requirements.

**6.2. Personal Requirements and Professional Equipment.** Crewmembers will carry or wear personal and professional equipment as follows:

6.2.1. All crewmembers will have a headset and operable flashlight on all flights

6.2.2. Helmets and Oxygen Masks.

6.2.2.1. All crewmembers will have a personal helmet and oxygen mask anytime parachutes are pre-positioned aboard the aircraft (to avoid head injuries during bailout), or when operational requirements exist. Normally, aircrew members deploying overseas, participation in combat / contingency operation, combat aircrew training (CAT) sorties, or combat exercises, will carry personal helmets and oxygen masks.

6.2.2.2. Protective headgear. The aircraft commander should direct the wearing of flight helmets during flight operations where aircraft maneuverings may pose a hazard to mobile crewmembers not in a seat with the seat belt fastened or secured at an observation window with an approved harness.

6.2.2.3. Quick-don oxygen masks.

6.2.2.3.1. If parachutes are not pre-positioned aboard the aircraft, and quick-don oxygen masks are installed, aircrew members are not required to carry personal helmets and oxygen

masks unless an operational requirement exists. Refer to AFI 11-302 for aircraft configuration requirements.

6.2.2.3.2. When quick-don oxygen masks are installed, they will be preflighted (to include communications hook up), if they are used as the primary oxygen source. If a personal helmet and oxygen mask is the primary oxygen source throughout the flight, there is no requirement for the quick-don mask to be preflighted or hooked up.

6.2.2.4. Crewmembers will present their personal oxygen equipment to the unit life support facility for inspection within 30 days before each flight requiring personal helmets and oxygen masks IAW AFI 11-302. As a minimum, helmets and oxygen masks will be inspected every 120 days.

6.2.3. Identification Tags. Two are required for all flights and should be worn around the neck or carried in the flight suit pocket.

6.2.4. Corrective Lenses. Comply with AFI 11-202, Volume 3.

6.2.5. Restricted Area Badges. Carry the restricted area badge on all missions (except actual combat missions). Display the badge only in designated restricted areas.

6.2.6. Passport. Carry passports on missions when required by the Foreign Clearance Guide.

6.2.7. Shot Record. Ensure immunization requirements are met. Carry shot record on all missions outside the CONUS states, Hawaii, and Alaska. EC-130J crew members must maintain worldwide shot requirements.

6.2.8. Driver's License. A valid state driver's license is required on each TDY where use of US government general-purpose vehicles may be required.

6.2.9. FOD Hazards. Crewmembers will not wear wigs, hairpieces, rings, ornaments, pins, clips, other hair fasteners, or earrings in, on, or around the aircraft or on the flight line.

**EXCEPTION:** Crewmembers may wear plain elastic hair fasteners and/or barrettes providing the fasteners do not interfere with the wearing of headsets or the donning of oxygen equipment and will be accounted for before and after flight.

6.2.10. A reflective belt or suitable substitute will be worn on unlit flight lines during hours of darkness or periods of reduced visibility (IAW AFOSH Standard 127-100, *Aircraft Flight Line - Ground Operations and Activities*).

**6.3. Aircraft Tool Kits.** A tool kit will be on board the aircraft for all flights. Units will identify tool kit contents and inventory procedures in their **Chapter 10**.

**6.4. Aircraft NVG Kits.** One night vision goggle (NVG) aircraft preparation kit will be onboard the aircraft for NVG missions (if required). Reference **Chapter 19** of this instruction for a list of items required in the NVG kit.

**6.5. Aircrew Publications Requirements.** Primary crewmembers will carry the publications specified in **Table 6.1**, on all missions. Units may specify additional publications in their local **Chapter 10**. Only one set of publications (except checklists) is required per crew position when more than one crewmembers is on board the aircraft (i.e., two loadmasters on passenger airlift missions).

**Table 6.1. Aircrew Publications.**

<b>PUBLICATION</b>	<b>AIRCREW</b>
AFI 11-202, V3 and applicable supplements	On Acft
AFI 11-2EC-130J, V3	On Acft
TO 1EC-130J(CS)-1, <i>Flight Manual</i>	On Acft
TO 1EC-130J(CS)-1CL-1	P / CP
TO 1EC-130J(CS)-1CL-1-1, <i>Fanfold Checklist</i>	P / CP
TO 1EC-130J(CS)-1CL-2	L
TO 1EC-130J(CS)-1CL-3	FSO
TO 1EC-130J(CS)-1CL-4	MSO
TO 1EC-130J(CS)-1CL-5	ECS
TO 1C-130J-1-1, <i>Performance Manual</i>	On Acft
TO 1C-130J-1-4, <i>CNI-MS Flight Manual</i>	On Acft
TO 1C-130J-1CL-4, <i>Passenger Brief</i>	L
TO 1C-130J-5, <i>Weight &amp; Balance</i>	On Acft
TO 1C-130J-5-1, <i>Sample Basic Weight Checklist</i>	On Acft
TO 1C-130J-5-2, <i>Load Data Manual</i>	On Acft
TO 1C-130J-9, <i>Cargo Loading Manual</i>	On Acft
TO 1C-130J-9CL-1, <i>On/Off Loading</i>	L
TO 1-1C-1, <i>Basic Air Refueling</i>	FSO
LTM 1-1C-1J-29, <i>Refueling Receiver</i>	FSO
LTM 1-1C-1J-29CL-1	P / CP
LTM 1-1C-1J-29CL-2	L
LTM 1-1C-1J-29CL-3	FSO
Flight Crew Information Summary (FCIS)	On Acft

**6.6. Aircraft Mission Kits .** Units will maintain one mission kit per aircraft. Prior to off-station departures, the aircraft commander or a designated representative will ensure a current mission kit is on board the aircraft. The kit will contain, but is not limited to, the items listed in [Table 6.2](#). Formal school units will establish the content of the mission kit for their assigned aircraft. Items required by a unit or wing directive to be carried by an individual crewmember need not be duplicated in the mission kit. Maintain sufficient quantities of directives and planning documents to allow implementation of evacuation and contingency plans.

**Table 6.2. Aircraft Mission Kit.**

AIRCRAFT MISSION KIT		
Publications		
	AFI 11-401	Aviation Management
	AFI 23-202	Buying Petroleum Products and Other Supplies and Services Off-Station
	AFJI 11-204	Operating Procedures for Aircraft Carrying Hazardous Materials
	Airfield Suitability and Restrictions Report (ASRR)	
	AMC Aircrew Border Clearance Guide	
	FCB (if applicable)	
Forms		
DD Forms		
	DD Form 173	Joint Message Form
	DD Form 175	Military Flight Plan
	DD Form 175-1	Flight Weather Brief
	DD Form 1351-2	Travel Voucher or Sub-voucher
	DD Form 1351-2c	Travel Voucher or Sub-voucher (Continuation Sheet)
	DD Form 1385	Cargo Manifest
	DD Form 1801	DoD International Flight Plan
	DD Form 1854	U.S. Customs Accompanied Baggage Declaration
	DD Form 2131	Cargo/Passenger Manifest
AF Forms		
	AF Form 15	USAF Invoice
	AF Form 70	Pilot's Flight Plan and Log
	AF Form 72	Air Report (AIREP)
	AF Form 315	USAF AvFuels Invoice
	AF Form 457	USAF Hazard Report
	AF Form 651	Hazardous Air Traffic Report (HATR)
	AF Form 711	USAF Mishap Report
	AF Form 1297	Temporary Issue Receipt
	AF Form 2282	Statement of Adverse Effect - Use of Government Facilities
	AF Form 3211	Customer Comments
	AF Form 4075	Aircraft Load Data Worksheet
	AF Form 4138	Special Operations C-130 In-flight Refueling Worksheet
	AF Form 4139	EC-130 Flight Plan and Navigation Log
	AFTO Form 151A	Individual C-130 Aircraft Usage Log

T.O. 1C-130J-1-1 Forms		
	Figure 10-1	<i>C-130J Take-off and Landing Data Card</i>
Other Forms		
	CF 7507	<i>General Declaration (Outward/Inward), Agriculture, Customs, Immigration and Public Health</i>
	HMS Customs Declaration	
	Japanese Customs Declaration	
	Foreign Nation-Custom Forms (When Applicable)	
	All Applicable Local Forms	
Miscellaneous Items		
	<i>Box Car seals</i>	

## 6.7. Pre-mission Actions .

- 6.7.1. Review tasking, itinerary, and ALTRV requirements.
- 6.7.2. Review applicable operations orders (OPORD), directives, and FLIP.
- 6.7.3. Review the *Foreign Clearance Guide* (if applicable). Obtain necessary PPRs and diplomatic clearances where required.
- 6.7.4. Complete inflight refueling tanker support, and ALTRV requests.
- 6.7.5. Complete TDY orders request forms (if required).
- 6.7.6. Coordinate COMSEC material requirements for duration of the mission.
- 6.7.7. Coordinate FLIP requirements for duration of the mission.
- 6.7.8. Obtain required customs forms.
- 6.7.9. Review anti-hijacking procedures (AFI 13-207, *Prevention and Resisting Piracy {Hijacking}*).
- 6.7.10. Obtain visas, if required.
- 6.7.11. Compile sufficient spare forms, flight orders, etc, to cover the TDY period.
- 6.7.12. Ensure physiological training, annual physical, immunizations, and flight evaluations will remain current throughout the TDY period.
- 6.7.13. Obtain terrain charts for all destinations. If unavailable, the OG/CC must be notified.
- 6.7.14. Aircrew Theater Indoctrination.
  - 6.7.14.1. Accomplish Theater Indoctrination Training and review theater indoctrination folders prior to missions/deployments transiting the following areas:
    - 6.7.14.1.1. Asia, Pacific, Australia, and Indian Ocean.
    - 6.7.14.1.2. Africa and the Middle East.
    - 6.7.14.1.3. Europe, Baltic's, and Russia.
    - 6.7.14.1.4. Caribbean, Central America, and South America.

6.7.14.1.5. Units may consolidate information common to all geographic areas into one folder titled "general deployment information." The remainder of the folders would contain only theater specific information.

6.7.14.2. Contents of the theater indoctrination folders should be tailored to each unit's specific mission. As a minimum, the following will be included:

6.7.14.2.1. Mission/Deployment Checklist. A locally developed checklist that includes mobility, training, and personnel requirements that should be accomplished prior to departure, and personal/professional items the aircrew must take with them.

6.7.14.2.2. Airspace/Airfield Review. FLIP, FIR/UIR/ADIZ procedures.

6.7.14.2.3. Airspace classifications, ASRR, and airport qualification videos (if available).

6.7.14.2.4. Theater Instrument Procedures. Required instruments and/or procedures for Non-DoD Approaches, course reversal approaches, circling, holding, NDB approaches, Host Nation/Jeppesen Approaches, and Altimeter setting procedures.

6.7.14.2.5. Organized Track Systems. MNPS airspace requirements; North Atlantic and Pacific Region Track Systems.

6.7.14.2.6. Communication and Emergency Procedures. C2, over-water position reporting, lost communications procedures, emergency procedures, weather information sources and Comm/Nav FM immunity requirements.

6.7.14.2.7. Border Clearance. FCG, customs, immigration, agriculture, insect and pest control, and diplomatic clearances.

6.7.14.2.8. Flight planning. DD Form 1801, **DoD International Flight Plan**, computer flight plans, approach plates and charts, theater weather conditions, fuel reserves and alternate requirements, equal time points (ETPs)/critical wind factors, and international NOTAMs.

6.7.14.2.9. Special Military Operations. Altitude reservations, inflight refueling, and due regard.

6.7.14.2.10. Other Regulatory Requirements. General navigation procedures, life support equipment, hazardous cargo, crew rest/crew duty time, aircraft records/781 procedures, mission essential ground personnel/additional crew members, passenger handling, etc.

6.7.14.2.11. Location Information. C2/reporting procedures, maintenance problems, aircraft security, social customs and taboos, billeting, transportation, etc.

6.7.14.3. Upon return, the aircraft commander will compile a trip report, when necessary, detailing lessons learned. The trip report will be placed in the theater indoctrination folder, closing the loop on ensuring validity of the folder.

**6.8. Airfield Certification.** All pilots, FSOs, loadmasters, and staff mission planners will review airport qualification audiovisual slide tape or video programs, as available, before operating missions into unfamiliar airfields. In addition, aircrews will consult and comply with the ASRR, review the Jeppesen produced *Airport Qualification and Familiarization Manual*, and should contact HQ AMC/DOA for updates to airfield operability and weight bearing capability. The latest information is available through the world

wide web (<http://www.safb.af.mil:81/hqAMC/directorates/AMCdo/doa/doas.htm>) or through GDSS/C2IPS

**6.9. Deployment Intelligence Briefing.** Prior to leaving home station on missions departing the United States, crews will receive an intelligence briefing that will emphasize terrorist, enemy, and friendly political and military development in the area in which they will be flying. In theater, aircrews should receive intelligence updates on initial arrival at a forward operating location (FOL), or enroute stop, and thereafter when significant developments occur. Report information of possible intelligence value to the local intelligence officers at the completion of each mission.

**6.10. Pre-Deployment Briefing.** Prior to deployments, the operations officer, mission commander, or designated representative will assemble the crew and brief description and purpose of the mission, tentative itinerary, aircraft configuration, special equipment, clothing required, anticipated housing and messing facilities, sufficient money to defray individual's anticipated expenses, personal equipment and field equipment requirements, special clearance requirements, and flying safety.

### ***Section 6B—Predeparture***

#### **6.11. Flight Crew Information File (FCIF).**

6.11.1. Review FCIF, volume 1, (index and safety-of-flight files, as a minimum) before all missions or ground aircrew duties. Update the FCIF currency record with the latest FCIF item number, date, and crewmember's initials or as specified.

6.11.2. Crewmembers delinquent in FCIF review or joining a mission enroute will receive an FCIF update from a primary aircrew member counterpart on the mission. Instructors who fly with general officers are responsible for briefing appropriate FCIF items.

6.11.3. Crewmembers not assigned or attached to the unit operating a mission will certify FCIF review by entering the last FCIF number and their initials behind their name on the file copy of the flight authorization or file copy of their crew orders (or as specified in MAJCOM supplement to this AFI).

**6.12. Flight Crew Read Files.** Units are encouraged to maintain aircrew read files for the purpose of distributing pertinent information on general flight operations, safety, and other aviation related topic.

**6.13. Mission Folders.** Current Operations will insure a mission folder is prepared for all sorties terminating at other than home station to ensure all predeparture information is available to aircrews. This folder will include the flight orders and other information required for the mission.

**6.14. Airfield Security.** When departing on missions destined outside the CONUS, ACs should review applicable MAJCOM security publications.

#### **6.15. Sensitive Mission Operations.**

6.15.1. Certain missions require special flight planning procedures or deceptive measures. Use of these procedures will be directed by mission operating directives, COMAFSOC operations orders, or other tasking orders. Modification to normal procedures will be fully briefed to aircrews prior to exe-

cution of the operation. All missions of this type requiring coordination with non-AFSOC agencies must be approved by COMAFSOC or the COMAFSOF prior to execution.

6.15.2. The planning agency tasked with the mission will provide the aircrew with the following information:

6.15.2.1. Departure profile.

6.15.2.2. En route procedures to include tracks, altitude reservation (ALTRV), Military Authority Assumes Responsibility for Separation of Aircraft (MARSA), tanker rendezvous, and emergency divert procedures.

6.15.2.3. Arrival procedures.

6.15.2.4. All communication requirements.

**6.16. SAFE PASSAGE Procedures** . Pilots and FSOs must be familiar with peacetime and wartime safe passage of friendly military aircraft (if applicable).

### **6.17. Briefing Requirements** .

6.17.1. **Pre-Mission Planning Briefing** . The current operations branch conducts this briefing as an aircrew briefing for deployment and operational/contingency missions. The purpose of this briefing is to advise aircrew members of mission requirements, the latest weather information, and to review all specialty information areas. Unit staff personnel should conduct the pre-mission planning briefing. All participating crewmembers and designated spares must attend the briefing. The briefing should be clear, concise, and designed to provide essential mission planning information. Aircrew members must be provided all applicable information available to ensure complete and professional aircrew planning.

6.17.2. **Buffer Zone** . Prior to operating an aircraft within or adjacent to an established buffer zone, the pilot will ensure primary crew members are briefed on current buffer zone procedures outlined in appropriate directives.

6.17.3. **Weather Briefings** . Request a written weather briefing on the DD Form 175-1, **Flight Weather Briefing**, other MAJCOM-approved forms, or US Military Weather Services format. Verbal weather briefings are authorized for local flights. Obtain a briefing on current weather, trends, and forecast for the proposed route, destination, and alternates. The AC will obtain the weather briefing and ensure all primary crewmembers are briefed on appropriate weather conditions before departure.

6.17.3.1. Obtain weather information from US Military weather services, any FAA-approved weather source, or any host nation civil or military weather source.

6.17.3.2. At home station and when transiting US Air Force bases, obtain weather following locally established procedures. This will normally be the base weather flight (when available) or the Operational Weather Squadron (OWS) serving the base.

6.17.3.3. If the flight will transit non-Air Force bases, crews must make arrangements to ensure adequate weather support facilities and services are available. An Air Force weather flight or the OWS responsible for the theater you are operating in can assist in this task.

6.17.3.4. If adequate services are not available, crews will obtain weather support through any means available to ensure required weather data is in their possession prior to mission accomplishment.

6.17.3.5. When face-to-face briefings are not possible, obtain a computer / telephone weather briefing (precedence up to and including IMMEDIATE is authorized). The designated MAJCOM regional briefing stations provide computer / telephone briefings for CONUS flights.

6.17.4. **Aircrew Intelligence Briefing** . Prior to the mission, crews will receive an intelligence briefing that emphasizes terrorist, enemy, and friendly political and military developments in the area in which they will be flying. In theater, aircrews should receive intelligence updates on initial arrival at a forward operating location (FOL), or enroute stop, and thereafter when significant developments occur. Report information of possible intelligence value to the local intelligence officers at the completion of each mission.

6.17.5. **Specialist Briefings** . Use specialist briefings to detail operating procedures or special interest items peculiar to various crew positions and to answer questions relating to those specialties

6.17.6. **Aircraft Commander Briefing** . Brief aircrew members on the specific mission essential information and details, if not previously accomplished. Emphasize essential mission information, air refueling details, tactics, mission operations, and safety issues directly related to the specific mission. Avoid needless repetition of standard published procedures covered during the detailed mission planning.

6.17.6.1. Schedule the briefing after considering crew rest, preflight, mission complexity, and FDP requirements along with other pertinent factors.

6.17.6.2. Crewmembers will not fly unless they attend the aircraft commander's briefing for their mission.

**EXCEPTION:** When preflight requirements dictate, aircraft commanders may excuse certain crewmembers from the briefing. The aircraft commander will ensure that those personnel receive a face-to-face briefing prior to engine start.

## 6.18. Call Signs .

6.18.1. Training Missions. Aircraft will use the unit static call sign prefix followed by a 2-digit suffix assigned by the parent unit.

6.18.2. Operational Missions. Aircraft will use call signs assigned by OPORD, FRAG, or diplomatic clearance. If no call sign has been assigned to the mission, use the unit static call sign prefix followed by a 2-digit suffix assigned by the parent unit.

6.18.3. When flying missions authorized under the AMC "REACH" call sign, aircraft will use the "REACH" call sign assigned number as directed, or as required by diplomatic clearance. When using the REACH call sign, complete flight plans as follows:

6.18.3.1. The Reach 01, 15, and 21 call signs will only be used by the AMC/CC, 15 AF/CC, and the 21 AF/CC respectively.

6.18.3.2. On the DD Form 1801, item 7, put the letters "RCH" followed by the last digit of the year the aircraft was built and the last 3 digits of the aircraft tail number.

6.18.3.3. On the Form 1801, item 18, remarks section, put “Rmk / RCH designates Reach call sign.”

6.18.3.4. On the DD Form 175, aircraft call sign block, put “RCH” followed by the last digit of the year the aircraft was built and the last 3 digits of the aircraft tail number.

6.18.3.5. On the DD Form 175, remarks block, put “RCH designates Reach call sign”.

**6.19. Instrument Flight Rules .** Conduct flight operations under IFR to the maximum extent possible without unacceptable mission degradation. This does not preclude VFR training to maintain proficiency in mission essential VFR operations.

6.19.1. Area Navigation (RNAV) Routings. The EC-130J, with a functional EGI, is approved for area navigation throughout the National Airspace System where radar monitoring by ATC is available (refer to paragraph 4.19. for restrictions). ATC will radar monitor each flight, however, navigation on the random RNAV route is the responsibility of the aircrew. When filing RNAV routings, use transponder code “R” on the DD Form 175, **Military Flight Plan**, or DD Form 1801, **DoD International Flight Plan**. Two methods are available for filing RNAV routes, one based on navigational aids and the other based on latitude and longitude coordinates. Comply with FLIP GP when filing for an RNAV route

**6.20. Flight Data Verification .**

6.20.1. Regardless of whether a flight plan is prepared by the aircrew or is furnished by another agency, the aircraft commander and FSO will verify routes, flight altitudes (to ensure proper terrain clearance), and fuel requirements prior to departure. The aircrew FSO who prepares or accepts the flight plan will remain on duty at the FSO’s station during departure and will brief the relieving FSO thoroughly on all en route and destination hazards.

6.20.2. Crews may use computer flight plans in lieu of the flight-planning portion of the AF Form 70, **Pilots’ Flight Plan and Flight Log** or AF Form 4138, **EC-130 Flight Plan and Navigation Log**.

**6.21. Departure Planning:** Comply with AFI 11-202V3 and applicable supplements, AFMAN 11-217, Instrument Flight Procedures, and guidance included in this instruction.

6.21.1. Gross Weight (GW). Ensure that the aircraft does not exceed the maximum gross weight, zero fuel weight, or center of gravity limitations specified in the aircraft flight manual. Gross weight may be further restricted by operating conditions such as wind shear, icing, temperature, pressure altitude, runway length and slope, airfield weight bearing capacity, departure maneuvering, required climb gradients, and obstacles.

6.21.2. SIDs and radar vectors are the preferred departure methods. IFR departure procedures are available at some civil and military fields to assist in avoiding obstacles during climb to the MEA and are published in the FLIP terminal approach books. Coordinate with the controlling agency prior to takeoff if unique routing is required.

6.21.3. Appropriate terrain charts should be reviewed prior to departure. The type of chart used depends on what is available for that part of the world, but normally GNC and JNC charts are not acceptable.

6.21.4. IFR Departure procedures:

6.21.4.1. IFR departures are not authorized at airfields with no instrument approach.

6.21.4.2. Only IFR departure method listed in the IFR departure section of AFI 11-202V3 are authorized.

6.21.4.3. For all IFR flights, the approach facility upon which minimums are based must be operational at the departure base and departure alternate, and approach equipment in the aircraft must be operational. When available, use RVR to determine the minimum visibility required for takeoff.

6.21.4.4. Do not equate SID-required climb gradients to aircraft climb profiles since aircraft climbout is not linear. Performance losses in turns, engine out performance loss, etc., are not considered, and actual gradients may be below those depicted on the SID. Use performance manual procedures to identify all significant obstacles in order to determine required performance.

**NOTE:** SIDs will not depict obstacles if a 2.5 percent climb gradient is sufficient to clear them (see [Figure 6.1](#)).

6.21.5. VFR Departures. VFR departures are authorized when required for mission accomplishment and all restrictions identified in AFI 11-202V3 and MAJCOM supplements are complied with. The weather at takeoff must permit a VFR climb to an IFR MEA, an appropriate IFR cruising altitude, or an altitude where radar vectors can be provided. The minimum enroute altitude will be the highest minimum enroute altitude along a route segment except when under positive radar control.

**NOTE:** VFR departures shall not be flown in lieu of obstacle clearance planning.

**6.22. Obstacle Clearance Planning:** IAW AFI 11-202 Volume 3, AFMAN 11-217, MAJCOM supplements, and this volume.

6.22.1. Obstacle Identification Surface (OIS). Obstacle identification for SID purposes (FAA Handbook 8260.3B, AFJMAN 11-226, UV Standard for Terminal Instrument Procedures (TERPS)), are those objects that penetrate an OIS of 40:1 (152 feet per NM). Calculation of the OIS on a SID continues until the SID reaches a MEA or until the SID terminates. Climb gradients of 200 feet per NM will provide at least 48 feet per NM clearance above all obstacles that do not penetrate the OIS. Complying with published climb gradients found on a SID or IFR departure procedure will provide at least 48 feet per NM clearance above all obstacles that do penetrate the OIS. The AC must be aware and thoroughly brief the crew on all obstacles along the departure flight path.

6.22.1.1. The AMC ASRR is an excellent source for obstacle information; however, it is not a stand-alone document. It is intended to supplement published climb gradients and obstacle information found on SIDs, published IFR departure procedures, GDSS/C2IPS, and terrain charts.

6.22.1.2. Aircrews may call HQ AMC/DOAS for additional airfield obstacle data. DSN 576-6316

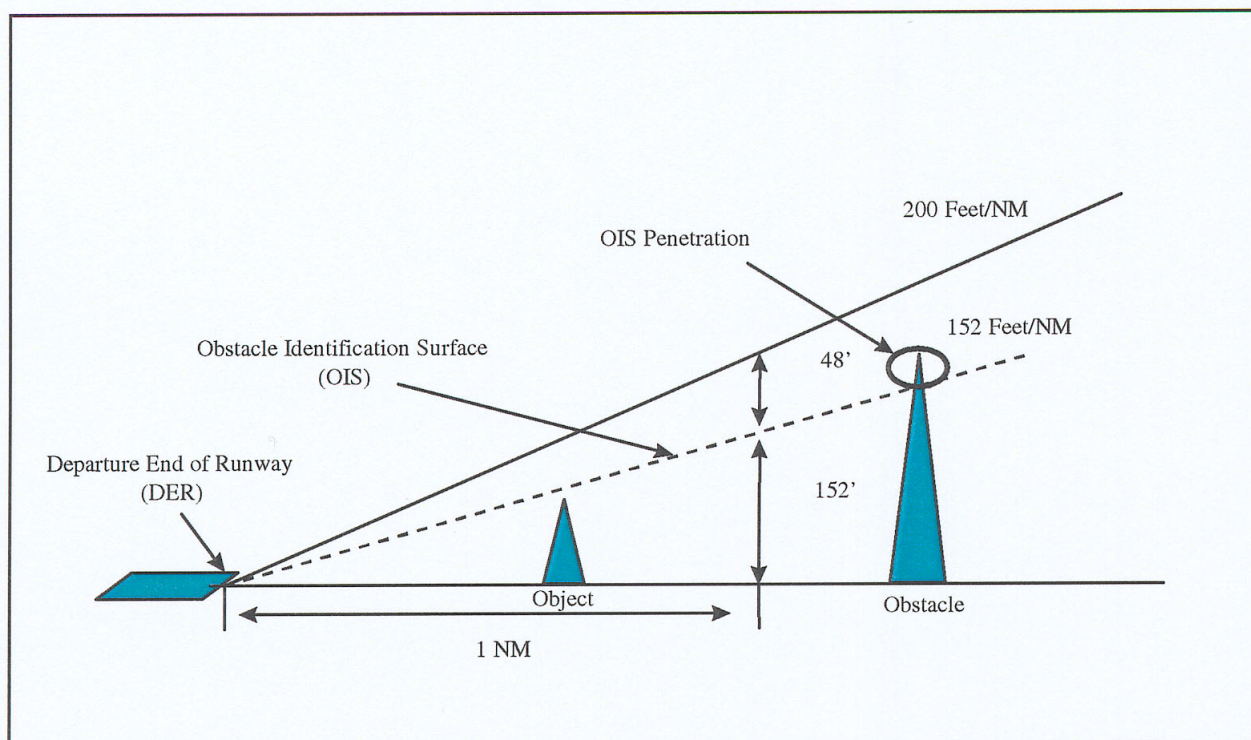
6.22.2. Objects penetrating the OIS may or may not be depicted (they definitely will not be depicted on civil procedures). Objects that do not penetrate the OIS will normally not be depicted.

6.22.3. SIDs simplify ATC procedures while providing safe routing to the enroute structure; however, SIDs should not be used as the sole source of obstacle information for departure planning. If used as such, inadequate (engine out) obstacle clearance may result. SIDs, instrument approach procedures, and topical sectional charts, must be used to determine the distance and height values for all significant obstacles along the flight path.

6.22.4. The controlling obstacle is defined as the obstacle requiring the greatest climb gradient within the flight path. Obstacles are normally not depicted on SIDs when climb gradients of less than 152 feet per NM are required to clear them.

6.22.5. In order to fly any IFR departure, aircrews must ensure they can meet the published/required climb gradient for the planned departure with all engines operating. In addition, aircrews will accomplish the following to ensure they can vertically clear all obstacles on or reasonably near the climbout/emergency return flight path with one engine inoperative.

**Figure 6.1. Obstacle Identification Surface.**



6.22.5.1. Use the most restrictive of the following to determine whether engine out climb performance is sufficient to provide obstacle clearance.

6.22.5.1.1. Using applicable obstacle height and distance information from available terrain charts (Operational Navigation Chart (ONC), Sectional Aeronautical Chart, Tactical Pilotage Chart (TPC), or Joint Operations Graphic (JOG), sectional etc.), the ASRR, base operations, etc., ensure engine out climb performance is sufficient to vertically clear obstacles along the planned departure and emergency return flight path.

6.22.5.1.2. If a climb rate is published for the planned departure, obtain an "engine out" climb rate by subtracting 48 feet from the published climb rate (if the climb rate is published in feet per minute, use the "60 kts" column, this is the same as feet per nautical mile). Compare this figure with actual airplane climb capability using the appropriate "3-Engine Climbout Flight

Path" chart. If actual capability is less than required "engine out" climb rate, comply with paragraph 6.22.5.2.

6.22.5.2. In the event that the "engine out" climb rate is not sufficient to clear all obstacles, the crew will consider the following.

6.22.5.2.1. Downloading cargo.

6.22.5.2.2. Downloading fuel.

6.22.5.2.3. Delaying the mission until climatological conditions allow for sufficient performance to clear all obstacles.

6.22.5.2.4. Coordinating alternate departure procedures with the controlling agency that will provide obstacle clearance.

6.22.6. If none of the options in paragraph 6.22.5.2. are feasible, the crew may depart on an IFR departure only if all the following conditions are met:

6.22.6.1. The aircraft is capable of achieving the minimum published/required climb gradient (200 FT/NM if none published/required) with all engines operating.

6.22.6.2. Day/VMC conditions exist on the entire departure and planned emergency return routing.

6.22.6.3. The AC has determined through a review of all applicable maps and charts that, in the event of an engine failure, the planned departure and emergency return routing will allow for obstacle avoidance.

6.22.6.4. The planned emergency route is briefed to the entire crew.

**NOTE:** ANG aircrews require home unit OG/CC approval prior to exercising this option.

6.22.7. In the event of an engine failure, aircrews will advise ATC if they are unable to comply with the published minimum climb. Obtain radar vector or avoid all obstacles visually.

6.22.8. The following procedures apply for all departures.

6.22.8.1. As a minimum, review the appropriate terrain chart or sectional chart in addition to the SID (if available). The following guidelines should help eliminate obstacles that are not a factor.

6.22.8.2. All obstacles on the SID will be considered. If no distance is published, use appropriate aeronautical chart (if available) to estimate flying distance to depicted obstacles.

6.22.8.3. When utilizing other sources for obstacle information, consider all obstacles which fall within the departure, or emergency return routing.

6.22.8.4. Escape routing must always be planned to ensure obstacle clearance and emergency recovery during engine failure.

## **6.23. Alternate Planning .**

6.23.1. If the departure weather is below published landing minimums, plan for a departure alternate IAW AFI 11-202, Vol 3 and applicable MAJCOM supplements.

6.23.2. Choose alternates that best meet mission requirements and conserve fuel. Those selected should not be within the same terminal area, if terminal forecasts are marginal. Select alternates that

are not restricted by FLIP, FCG, or diplomatic clearances, and are compatible with the mission load and performance characteristics of the aircraft.

6.23.3. Alternates selected must meet the alternate airport weather requirements according to AFI 11-202, Volume 3 and applicable MAJCOM supplements.

6.23.4. The AC retains final authority in the choice of alternates; however, selection by support agencies normally should be used if they meet the above criteria and the aircraft has already been serviced.

## 6.24. Weather Minimums For Takeoff.

**Table 6.3. Weather Minimums For Takeoff.**

Mission	Visibility	Remarks
Operational	RVR 1000	When less than RVR 1600, but equal to or greater than RVR 1000, the crew may takeoff provided the runway has dual RVR readouts and displays (minimum RVR 1000 on both) and runway centerline lighting is operational. For any takeoff below 1600 RVR, the crew must be fully qualified.
All others	RVR 1600	For runways with more than one operating RVR readout, RVR must read 1600 minimum on all.

**NOTE:** When weather is below approach and landing minimums (ceiling or visibility) a takeoff alternate is required (See paragraph 6.19.).

**NOTE:** If no RVR readout is available for the departure runway, visibility must be reported to be 1/2 mile (800 meters).

## 6.25. Departure Alternates.

6.25.1. A departure alternate is required if ceiling or visibility is below landing minimums for an available approach (at departure aerodrome). If planning an ILS approach, category I minimums will be used.

6.25.2. Suitability of Departure Alternates. When departure alternate is required, the aircraft must be capable of maintaining the MEA or MOCA, whichever is higher, to the alternate using one engine-out performance criteria. To qualify as a departure alternate, the airfield must meet one of the following conditions.

6.25.2.1. Existing weather at an alternate within 30 minutes flying time must be equal to, or better than the published approach minimums, and forecast to remain so until 1 hour after takeoff, but not less than 200-1/2 (RVR 2400), or;

6.25.2.2. The existing weather at an alternate within 2 hours flying time must be at least 500-1 above the lowest compatible published approach minimums, but not less than 600-2 for a precision approach or 800-2 for a non-precision approach, and forecast to remain so for 1 hour after ETA at the alternate.

**6.26. Destination Requirements (for filing purposes).** The forecast destination weather requirements will be according to AFI 11-202, Volume 3 and the following:

6.26.1. File two alternates when:

6.26.1.1. The forecast weather is less than required minimums for the lowest compatible approach.

6.26.1.2. The forecast surface winds (intermittent or prevailing) exceed limits corrected for RCR.

6.26.2. File an alternate, regardless of forecast weather, when the departure or destination aerodrome is outside the CONUS. (**EXCEPTION:** Intra-theater flights outside CONUS that do not exceed 3 hours, comply with basic AFI 11-202 Vol 3.) If the destination is remote or an island, with no alternate available, add holding fuel in accordance with [Table 6.3](#) in lieu of an alternate.

6.26.3. A remote or island destination is defined as any aerodrome which, due to its unique geographic location, offers no suitable alternate (civil or military) within 2 hours flying time. The forecast weather at the remote or island destination must meet the following criteria:

6.26.3.1. The prevailing surface winds, corrected for RCR, must be within limits at ETA and forecast to remain so for 2 hours thereafter, and

6.26.3.2. The prevailing ceiling and visibility must be equal to or greater than published minimums for an available non-precision approach, for ETA plus 2 hours.

**NOTE:** If a precision approach is available, the ceiling or visibility may be intermittently below non-precision approach minimums (excluding ASR), but not below precision approach minimums (for ETA plus 2 hours).

## 6.27. Adverse Weather.

6.27.1. Plan and fly all missions to avoid areas of known or forecast severe weather including severe icing or severe turbulence which may exceed aircraft limitations.

6.27.2. During flight, use any means available to avoid thunderstorms by at least:

6.27.2.1. 20 NMs at or above flight level (FL) 230.

6.27.2.2. 10 NMs below FL 230.

6.27.2.3. 5 NMs for tactical operations below FL 230 provided outside air temperature is at or above 0 degrees Celsius at flight altitude. Avoid gust fronts and winds preceding a rapidly moving thunderstorm.

6.27.2.4. Clear the top of a known or suspected severe thunderstorm by at least 1,000 feet altitude for each 10 knots of wind speed at the cloud top. Avoid gust fronts and winds preceding a rapidly moving thunderstorm.

6.27.2.5. Avoid the rain shaft and cloud base of thunderstorms and CBs using the criteria of [6.27.2.2](#) and [6.27.2.3](#). Do not fly under the anvil of a cumulonimbus cloud.

6.27.3. Avoid thunderstorms visually, by airborne radar, or by specific request of a ground-based radar with weather capability. The use of ground-based radar as a means of thunderstorm avoidance should only be used to assist in departing an inadvertently penetrated area of significant weather. It should never be considered a normal avoidance procedure. When relying exclusively on ground-based radar for weather avoidance, and the ground controller is unable to provide avoidance instructions, attempt to maintain VMC by:

6.27.3.1. Changing routing.

6.27.3.2. Diverting to alternate.

6.27.3.3. Declaring an emergency and requesting priority assistance.

6.27.4. Aircrews should avoid flying in areas of recently dissipated thunderstorms and advected clouds downwind of thunderstorms. Crew actions should err on the side of safety.

6.27.5. Do not fly directly above (within 2,000 feet) thunderstorms or cumulonimbus clouds. If unable to clear thunderstorms or cumulonimbus clouds by at least 2000 feet vertically, you must avoid them using the above criteria.

**CAUTION:** Aircraft damage may occur 20 NMs or more from any thunderstorms. Aircrews must familiarize themselves with information on thunderstorm development and hazards. Refer to AFI 11-203, *Weather for Aircrews*.

6.27.6. In order to minimize exposure to thunderstorm hazards when approaching or departing an airport in an area where thunderstorms are occurring or are forecast:

6.27.6.1. Attempt to maintain VMC.

6.27.6.2. Maintain at least 5 NMs separation from heavy rain showers

6.27.6.3. Avoid areas of high lightning potential, i.e. clouds within plus or minus 5,000 feet of the freezing level.

**NOTE:** Approaches or departures may be accomplished when thunderstorms are within 10 NMs. The thunderstorms must not be producing any hazardous conditions (such as hail, lightning, strong winds, gusts fronts, heavy rain, wind shear, or microburst) at the airport, and must not be forecast or observed to be moving in the direction of the route of flight (to include the planned missed approach corridor, if applicable).

6.27.7. Aircrews performing approaches and landings at locations where temperatures are 0 degrees Celsius or below will refer to the FIH, [Section 6D](#), Temperature Correction Chart, to correct MDA, DH, and other altitudes inside the FAF if required.

6.27.8. Do not fly into an area of known or forecast moderate or greater mountain wave turbulence. Crews should use good judgment when flying into any area conducive to mountain wave turbulence, and avoid these areas of potential turbulence when possible.

6.27.8.1. Mountain wave turbulence is normally a predictable condition. Forecasters at base weather stations, using guidance products from weather centers, can advise crews of the potential for encountering mountain wave turbulence along planned routes of flight. However, weather data availability in mountainous regions and forecast model limitations prevent the prediction of all events. Crews must be familiar with the causes of mountain wave turbulence and the characteristic clouds that generally forewarn its presence.

6.27.9. Flight into areas of forecast or reported severe icing or severe turbulence is prohibited.

6.27.10. Significant Meteorological Information (SIGMET) advisories will be transmitted from the servicing ATC unit. Crews will consider all SIGMETs valid for their aircraft until verified as not applicable with a military METRO service.

6.27.11. Volcanic Dust Precautions. Plan all missions to avoid general vicinity of volcanic activity. Aircraft operation in area of forecast or known volcanic activity or dust is prohibited.

6.27.12. Lightning Avoidance. The following conditions are most favorable for lightning strikes and prolonged flight in them should be avoided when feasible:

6.27.12.1. Within 5,000 feet of the freezing level.

6.27.12.2. In clouds or in any intensity of precipitation or turbulence associated with thunderstorm activity.

## 6.28. Route Navigation Kits:

6.28.1. CONUS FLIP publications will be maintained on board each aircraft in the publications holder located in the crew compartment. The unit's FSO section will ensure the currency of all FLIP publications maintained on unit assigned aircraft. On trips departing CONUS, an OCONUS FLIP publications kit will be prepared by the FSO and checked by the aircraft commander, and remain with the aircraft until its return. Kits should contain sufficient quantities of material to cover the complete round trip from the issuing station and return, plus appropriate materials to cover the theater of operation.

6.28.2. Have sufficient material to cover the deployed theater of operations and the planned route from home station to destination and return.

6.28.3. The COMAFSOF may augment kits as necessary to meet special operational requirements.

6.28.4. Commanders may modify the items as necessary for local training missions.

**Table 6.4. NAVIGATION KITS.**

NAVIGATION KITS	
The minimum contents of route navigation kits are as follows	
Item (applicable to area of operations)	Quantity
FLIP GP Planning (sections GP, AP/1, AP/1B, AP/2, AP/3, AP/4)	1
FLIP IFR Supplement	2
FLIP Flight Information Handbook	2
FLIP Enroute (high and low)	2
FLIP Area Charts (Terminal)	2
FLIP Instrument Approach Procedures (high and low)	3
Standard Instrument Departures (SIDs)	3
Standard Terminal Arrival Routes (STAR)	3
Topographical and Sectional Charts for areas of operation (GNC/ONC/TPC/JNC/JOG/Sectionals)	As Required
FLIP VFR Supplement	1
DoD Area Arrival Charts	2

6.28.5. Local area navigation kits may be used in lieu of route navigation kits on local unit training sorties. The contents of these kits will be determined by the unit.

**6.29. Authenticators and Classified Documents.** Obtain and safeguard current authenticators and other classified materials required for the area being transited. Carry authenticators when flying into an air defense identification zone (ADIZ), participating in exercises, on overseas missions, deployments, and when specified in operation plans. The communications security (COMSEC) material required depends on the theater of operation and user. The base COMSEC custodian has access to the AFKAG 44/AFKAG 14 and can assist in obtaining the material required for the mission. Base operations at AMC bases maintain the COMSEC material used on most missions.

### ***Section 6C—Preflight***

**6.30. AFTO Form 781, ARMS Aircrew/Mission Flight Data Document .** Review AFTO Form 781 before applying power to the aircraft or operating aircraft systems. The exceptional release must be signed before flight. A maintenance officer, maintenance superintendent, or authorized civilian normally signs the exceptional release. If one of these individuals is not available, the AC may sign the exceptional release. Ensure the USAF Aviation Into-plane Reimbursement Air Card is on board the aircraft.

### **6.31. Aircraft Servicing and Ground Operations .**

6.31.1. Aircraft Refueling. Use primary fuel management IAW the aircraft flight manual whenever possible. Aircrew members qualified in ground refueling may perform refueling duties at austere locations, or cases when maintenance support is not readily available and the mission would be delayed. Crewmembers may augment maintenance-refueling teams at Enroute stops. Crewmembers acting as refueling supervisors and panel operators will comply with T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding* and refueling job guide. Crew chiefs should be scheduled on those missions where a need is anticipated.

6.31.2. Concurrent Ground Operations. Concurrent ground operations (simultaneous refueling or de-fueling while cargo or maintenance operations are being performed) are authorized in accordance with T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*. Aircrews performing Dash-1 preflight inspections or cargo loading concurrent with servicing must have cooperation and close coordination with the Chief Servicing Supervisor (CSS). The CSS will remain in continuous intercom contact with fuel servicing team members during the entire servicing operation. Team members include CSS, refueling panel monitor, fuel specialists, and one person to monitor the opposite side wing fuel vents.

6.31.2.1. Movement into or within the safe area must be under control of the CSS. Individuals must properly ground themselves before boarding the aircraft or handling fuel-servicing equipment. Concurrent servicing, loading, and maintenance must be conducted according to T.O. 00-25-172 and current checklists, which will be reviewed before concurrent operations. Current checklist procedures take precedence over T.O. 00-25-172 procedures.

6.31.2.2. Simultaneous fuel and oxygen servicing is not authorized.

6.31.2.3. Winching of rolling stock and non-spark producing (i.e. wooden) pallets is authorized. Driving vehicles equipped with spark arresters is authorized during fuel servicing. When loading vehicles without spark arresters, the vehicles must be either completely inside the cargo compart-

ment, or outside of the established fuel servicing safety zone before fuel servicing lines can be pressurized.

**EXCEPTION:** Diesel and turbo-charged (without waste gates) gasoline-powered vehicles can be on-loaded or off-loaded without having to stop fuel flow.

**EXCEPTION:** Passengers are prohibited in the cargo compartment during winching.

6.31.3. The following guidance will be used for fuel servicing (refuel/defueling) operations only:

6.31.3.1. Passengers are not allowed on board unless expressly directed by MAJCOM DO/XO, or in combat.

6.31.3.1.1. When directed, Refueling or Defueling with passengers or patients on board is authorized only for aeromedical evacuation missions IAW T.O. 00-25-172.

6.31.3.1.2. In this case a qualified crewmember is required to monitor the passenger compartment when passengers are on board.

6.31.3.2. Electric and electronic equipment may be left on provided it does not radiate energy; but is not turned on or off during refueling. Will need to determine what equipment, if any, can remain on or in standby during refueling.

6.31.4. Crash, Fire, and Rescue Protection:

6.31.4.1. The aircraft engine fire extinguisher system fulfills the minimum requirements for fire protection during engine start. If available, position a portable fire extinguisher for added fire protection.

6.31.4.2. A fireguard is required for all engine starts, including the APU. In the absence of additional ground personnel, the loadmaster or ground controller may act as the fireguard.

6.31.5. Aircrew and Maintenance Engine Run Ups. A mixture of aircrew and maintenance personnel will not normally accomplish engine runs. When an aircrew member is required to start or run up engines for maintenance purposes, the following procedures apply:

6.31.5.1. Maintenance personnel will accomplish all necessary inspections and preparations for the engine run. These actions include but are not limited to: intake/exhaust inspections, access panel security servicing, and AFTO Form 781 documentation.

6.31.5.2. Use the pilot and loadmaster checklists. Begin with the "POWER UP CHECKLIST" (if required) and complete all appropriate checklists through the "BEFORE LEAVING THE AIRPLANE" checklist.

6.31.5.3. Deviate from the flight crew checklist only when maintenance requires less than four engines to be started.

6.31.5.4. Operate symmetrical engines when power settings above ground idle are required.

6.31.6. Towing. Aircrew members normally will not participate in towing operations. If required to occupy cockpit positions during towing operations conducted by personnel not familiar with C-130J towing procedures, the AC will coordinate with the senior maintenance officer or superintendent to ensure the towing supervisor and crew are qualified. At non-USAF installations, the AC must have approval from the airfield operations officer or manager prior to towing. The AC will ensure the tow team supervisor briefs all personnel on their duties and the associated hazards. Proper checklists will

be used. If any doubt exists as to the qualification of tow team personnel or the safety of the operation, make no attempt to tow the aircraft until qualified Air Force personnel can be located. Under no circumstances will any crewmember act as the towing supervisor.

### **6.32. Aircrew Dash One Preflight .**

6.32.1. Once completed, the aircraft aircrew preflight inspection is valid for 72 hours provided access to the aircraft is controlled or monitored. The use of a boxcar seal is an acceptable method of controlling access. For Alert Aircraft follow the guidance in paragraph [5.42](#).

6.32.2. When an aircrew assumes a preflighted spare or quick-turn, a thorough visual inspection will be performed, paying particular attention to areas affected by maintenance or servicing.

6.32.3. Aircrew preflight inspections are normally done in preparation for flight by the assigned aircrew just prior to the mission. Having a partial aircrew, not scheduled to fly, accomplish multiple aircraft preflight duty is not an acceptable practice, except to prepare for operational readiness exercises (ORE), operational readiness inspections (ORI), contingencies, or other specific missions as directed by the unit or deployed mission commander.

6.32.4. The following guidelines apply to aircrew assigned to preflight and/or seal aircraft. A loadmaster will not preflight more than 4 aircraft in a 12-hour period or perform preflight duties for more than 12 hours. Crew rest according to AFI 11-202V3, paragraph [9.4.6.2.](#), is required. Aircrews performing preflight duties will be afforded 12 hours rest between preflight shifts.

6.32.5. Unqualified crewmembers may not preflight aircraft except under the supervision of an instructor.

**6.33. Life Support Equipment Documentation.** Life support will accomplish a thorough aircraft preflight inspection prior to each mission. Local training missions only require a preflight inspection prior to the first flight of the day.

6.33.1. The aircraft commander or designated representative will ensure appropriate serviceable protective clothing, life support, and survival equipment are on board the aircraft for the entire or remainder of the mission.

6.33.2. Prior to departing home station and following en route crew changes, review the AFTO Form 46, **Pre-positioned Life Support Equipment**, to ensure all required equipment has been certified as installed by maintenance, the initial check has been signed by maintenance, and configuration documents match mission requirements.

6.33.3. Missing Equipment. Aircrew members discovering equipment missing will make an entry in the AFTO Form 781.

### **6.34. Life Support Requirements.**

6.34.1. Oxygen. Oxygen on board for takeoff must be sufficient to accomplish the flight planned route from the equal time point (ETP) to the first suitable airfield should oxygen be required or a minimum of 10 liters for takeoff, whichever is greater.

6.34.1.1. Since the C-130J flight deck can accommodate more crewmembers than there are oxygen regulators, all C-130J aircraft will have three emergency escape breathing devices (EEBD), or

emergency passenger oxygen system (EPOS) permanently pre-positioned on the aircraft. The EEBDs/EPOS may be stored on the overhead storage rack when not required on the flight deck.

6.34.1.2. On missions with passengers, carry emergency passenger oxygen systems (EPOS) if flight above flight level (FL) 250 is anticipated. Ensure access to EPOSs is not blocked during flight. Distribute EPOSs and demonstrate their use prior to exceeding FL 250. The EPOS provides no protection when ambient air contains smoke or fumes.

6.34.1.3. Do not remove the loadmasters' emergency equipment (cargo compartment quick dons/ smoke masks) for use by flight deck crew members.

6.34.1.4. Aircrew members will comply with the oxygen requirements specified in AFI 11-202 Vol 3.

6.34.1.5. Crewmembers occupying a crew station will have an oxygen mask connected and readily available for use from before engine start until engine shutdown.

6.34.1.6. Crewmembers who do not have access to the aircraft oxygen system will have an EPOS, or EEBD within arm's reach for flights above FL 250.

6.34.2. Rafts. Ensure sufficient wing well life rafts are on board to accommodate all passengers and aircrew members on overwater flights.

6.34.3. Life Preserver Underarm (LPU):

6.34.3.1. Ensure sufficient quantities of life preservers are on board for all passengers and crewmembers for overwater flights. While overwater, LPUs will be sized and available at the crewmember's station, and worn whenever below 2,000 feet overwater (except for takeoff and landing). For overwater missions carrying children and infants, ensure appropriate number and type of LPUs and infant cots are on board.

6.34.3.2. If overwater and the mission requires wear of the parachute harness, the LPU will also be worn.

6.34.3.3. It is recommended that life preserver units (LPU) be worn for takeoffs when the aircraft will be overwater prior to reaching the initial cruising altitude.

6.34.4. Anti-exposure suits. Anti-exposure suits will be available during overwater flights when route of flight is beyond power off gliding distance from land and the water temperature is 60 degrees Fahrenheit (F) or below. If the water temperature ranges between 51 degrees F and 60 degrees F, the unit or mission commander may waive or extend the anti-exposure suit requirement after carefully considering the following factors:

6.34.4.1. Climate zone and existing weather throughout range of flights.

6.34.4.2. Operational requirements.

6.34.4.3. Number and type of aircraft in formation.

6.34.4.4. Time of flight over water.

6.34.4.5. Risk, based on aircraft load and mission configuration.

6.34.4.6. Degree of surveillance over mission.

6.34.4.7. Location, availability, and capability of SAR forces (Consider anticipated time in the water prior to pick-up).

6.34.4.8. Winds and wave height and their impact on SAR.

6.34.4.9. Altitude and distance from land.

**NOTE:** Anti-exposure suits are not required when only the approach or departure is flown over water.

6.34.5. Parachutes:

6.34.5.1. Parachutes will be carried on aircraft IAW AFI 11-302.

6.34.5.2. Personnel performing duties near an open (or suspected open) door/hatch/ramp inflight will be restrained by a safety harness, or be wearing a parachute.

6.34.5.3. Either wear, or have pre-fit and pre-positioned parachutes and helmets during combat.

**6.35. Fleet Service.** Ensure required fleet service items are aboard the aircraft early enough to permit inventory 60 minutes before takeoff time.

**6.36. Cargo Documentation:**

6.36.1. Proper cargo documentation must accompany each load. The cargo manifest and DD Form 1384, **Transportation Control and Movement Document (TCMD)** and special handling documents as applicable, will be delivered to the aircraft before departure. The manifest will be one of the following:

6.36.1.1. Computer printed product.

6.36.1.2. 80/80 (Offline Manifest) listing.

6.36.1.3. DD Form 1385, **Cargo Manifest**.

6.36.1.4. DD Form 2131, **Passenger Manifest**. This form is designed for use during exercises, wartime, and contingency operations.

6.36.1.5. DD Form 2130-2, **C-130A/B/E/H Load Plan**.

6.36.2. DD Form 2133, **Joint Airlift Inspection Record**, will accompany the manifest if required.

6.36.3. Special handling documents, Shipper's Declaration for Dangerous Goods, will accompany the manifest as applicable.

6.36.4. At stations where there is no mobility air transportation function, the aircrew will collect the required load information on each leg and submit it to the first station, which has such a function. The report will be submitted on MC Form 57, **Aircraft Load Data Worksheet**.

**6.37. Procedures for Airlifting Hazardous Cargo .**

6.37.1. Procedures for airlifting hazardous cargo can be found in the following publications: AFI 24-201 *Cargo Movement*; AFI 24-202 *Preservation and Packing*; AFJI 11-204 *Operational Procedures for Aircraft carrying Hazardous Materials*; AFMAN 24-204(I) *Preparing Hazardous Materials for Military air Shipments*.

6.37.2. The term "hazardous cargo", as used in conjunction with airlift operations, applies to the following classes and types of materials covered by AFMAN 24-204(I):

- 6.37.2.1. Class 1 (Explosives)
- 6.37.2.2. Class 2 (Compressed gas)
- 6.37.2.3. Class 3 (Flammable liquid)
- 6.37.2.4. Class 4 (Flammable solid)
- 6.37.2.5. Class 5 (Oxidizer and organic peroxide)
- 6.37.2.6. Class 6 (Poison and infectious substances)
- 6.37.2.7. Class 7 (Radioactive material)
- 6.37.2.8. Class 8 (Corrosive material)
- 6.37.2.9. Class 9 (Miscellaneous dangerous goods)

6.37.3. Procedures in this paragraph apply when aircraft carry any quantity of the following materials.

- 6.37.3.1. DoD class or division 1.1, 1.2, 1.3 (explosives)
- 6.37.3.2. Class or division 2.3 (poison gas)
- 6.37.3.3. Class or division 6.1, (poison) PG I, zone A and B
- 6.37.3.4. Class 7 (radioactive yellow III label.)
- 6.37.3.5. Class 4.3 (dangerous when wet)
- 6.37.3.6. Nuclear weapons, nuclear components, inert devices
- 6.37.3.7. DoD hazard class or division 1.4 explosives that transit the United Kingdom, Italy, or Hawaii.

6.37.4. Procedures also apply to nuclear related cargo, toxic chemical ammunition, highly toxic substances, hazard division 1.1 through 1.3 explosives, and infectious substances (including biological and etiological materials). In addition, it applies to Class 7 (Radioactive materials), which require a yellow III Label, and all other hazard classes or divisions, (except class 9 and other regulated material (ORM-D)) when shipped in quantities of 1,000 pounds (455 Kgs) or more aggregate gross weight.

**NOTE:** Quantities not covered in paragraphs 6.37.2. and 6.37.3. are exempt from these procedures.

6.37.5. The following procedures are established to satisfy the reporting requirements of AFJI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Materials*:

6.37.5.1. The AC will be briefed when the quantities specified in paragraphs 6.37.2. and 6.37.3. are involved. The briefing will cover the following points:

- 6.37.5.1.1. Hazard class.
- 6.37.5.1.2. Proper shipping name.
- 6.37.5.1.3. DoD class or division when any type explosives are involved.
- 6.37.5.1.4. Net explosives weight (NEW) for all DoD class or division 1.1, 1.2, and 1.3 explosives and gross weight of blasting agent aboard the aircraft.

- 6.37.5.1.5. Gross weight of hazardous materials other than the explosives above.
- 6.37.5.1.6. Passenger restrictions.
- 6.37.5.1.7. Written notification indicating "prior permission required" (PPR), obtained from the next base to be transited
- 6.37.5.1.8. Smoking restrictions.
- 6.37.5.1.9. Flight plan annotation requirements.
- 6.37.5.1.10. Isolated parking and taxiing requirements.
- 6.37.5.1.11. Security classification, if appropriate.
- 6.37.5.1.12. Notification of the requirement to contact the next base to be transited at least 30 minutes prior to landing. (Such contact is not required for quantities other than those in paragraphs 6.37.2. and 6.37.3.).
- 6.37.5.1.13. Placard requirements.
- 6.37.5.1.14. Escort team requirement, if applicable.
- 6.37.5.1.15. Other special handling requirements.
- 6.37.5.2. Cargo documentation and loading procedures.
  - 6.37.5.2.1. The loadmaster will ensure proper documentation, certification and identification of cargo is furnished. AFMAN 24-204(I), *Preparing Hazardous Materials for Military Air Shipments*, contains detailed instructions on packaging, marking, labeling, and certification requirements associated with the airlift of hazardous materials. Hazardous materials/cargo not properly packaged and documented in accordance with AFMAN 24-204(I) will be rejected for air shipment by the loadmaster.
  - 6.37.5.2.2. Hazardous materials/cargo falls into many categories and the utmost precautions must be observed when handling or transporting these items. Load all hazardous material to permit easy access inflight without moving other cargo. Load jettisonable hazardous material to facilitate jettisoning. Adhere to the following appropriate safety precautions when loading hazardous cargo as appropriate:
    - 6.37.5.2.2.1. Ventilate the aircraft.
    - 6.37.5.2.2.2. Placard the aircraft.
    - 6.37.5.2.2.3. No smoking.
    - 6.37.5.2.2.4. Fire extinguishers must be available.
    - 6.37.5.2.2.5. Thoroughly inspect the cargo.
    - 6.37.5.2.2.6. Stow cargo away from heater outlets.
    - 6.37.5.2.2.7. Notify medical personnel in case of damage to radioactive materials.
    - 6.37.5.2.2.8. Use protective clothing and equipment.
- 6.37.5.3. Flight Planning. When briefed according to paragraph 6.37.5.1., the AC will:

6.37.5.3.1. Enter "Hazardous Cargo" and the mission identifier or flight number in the appropriate section of the flight plan. (Use remarks section of DD Form 175, **Military Flight Plan**, and other information section of DD Form 1801, **DoD International Flight Plan**.) Refer to the FCG for country specific requirements concerning over-flight when transporting hazardous materials cargo.

6.37.5.3.2. If possible, plan the flight to minimize over-flying heavily populated or otherwise critical areas. Approach, landing, and takeoff tracks are excluded.

6.37.5.3.3. Prepare a departure message at stations when a C2 agency is not available. The remarks section of the departure message should include the following information:

6.37.5.3.3.1. Class of hazardous material aboard and the DoD class or division for explosives and NEW. Include the gross weight for the materials in paragraph [6.37.3](#).

6.37.5.3.3.2. Request for special handling; for example, isolated parking, security, technical escort teams, etc.

6.37.5.3.4. If estimated time enroute (ETE) is less than 1 hour, or if other circumstances preclude timely message receipt at destination, notify the base of first intended landing by priority telephone of the ETA and information listed in paragraph [6.37.5.3.3](#). If available ask the C2 agency at the departure base to relay this information to base operations at the point of first intended landing.

6.37.5.4. Before engine start. Remove placards, when used, from the aircraft. Give the controlling agency parking location, approximate engine start time, and verify the fire fighting agency has the hazardous materials information; otherwise, request the following be relayed to the fire fighting agency:

6.37.5.4.1. Class of hazardous material aboard and the DoD class or division for explosive materials aboard.

6.37.5.4.2. NEW for DoD class or division 1.1, 1.2, and 1.3 explosives.

6.37.5.4.3. ETD.

6.37.5.5. Enroute. Normal procedures apply. Comply with paragraph [6.37.5.3.2](#).

6.37.5.6. Before landing. Unless specifically prohibited by the theater commander or FLIP planning or the FCG, contact the agency specified in FLIP/FCG, base operations dispatcher, control tower or approach control at least 30 minutes (or as soon as practical) before ETA to announce that "hazardous materials" are aboard and to verify that the hazardous materials/cargo message has been received. Transmit the mission number, ETA, and information in paragraph [6.37.5.3.3](#). Request the information be relayed immediately to base operations or the civil airport manager, crash and fire protection agency, and other support activities. If landing at a United States civil airport without a tower, give the above information to the nearest FAA flight service station.

6.37.5.7. DoD requires aircraft carrying DoD class or division 1.1, 1.2, and 1.3 explosives, hazardous class or division 2.3, or 6.1 zone A materials, and munitions to be parked in areas isolated from non-associated personnel and facilities. When such cargo is aboard, ACs are responsible for ensuring cargo is correctly identified to the tower or ground control. If the aircraft is not directed to an isolated area, identify the cargo again to tower or ground control. When identification is acknowledged, the host is solely responsible for selecting the parking area. Should host proce-

dures be questionable, submit trip reports or hazard reports as appropriate, to document such occurrences.

6.37.5.8. The military host is responsible for placarding aircraft. When missions operate on non-military bases, the briefing to the AC will include placarding requirements and, if required, placards will be furnished at the on-load base. The shipper and receiver must make prior arrangements with the airport manager for shipments of hazardous materials requiring placarding. The shipper and receiver are responsible for cargo identification, fire fighting procedures, and isolated parking requirements.

6.37.5.9. **Unscheduled Landing Due to inflight Emergency.** Transmit unclassified information to the appropriate ATC facility as follows:

6.37.5.9.1. Nature of emergency and intent to land.

6.37.5.9.2. Aircraft position and ETA.

6.37.5.9.3. Number of personnel and location in aircraft.

6.37.5.9.4. Fuel on board.

6.37.5.9.5. Hazardous materials aboard, location of the cargo, and information listed in paragraph [6.37.5.3.3](#).

6.37.5.10. **After Unscheduled Landing.** Contact the appropriate C2 agency by telephone, HF radio, or message, giving arrival notice, hazardous materials information, and other pertinent information, as required.

## **6.38. Handling of Classified Cargo, Registered Mail, NMCS/VVIP/FSS Shipments, and Courier Material .**

6.38.1. MICAP, VVIP, sensitive cargo, courier materials, and registered mail moving within the normal airlift system are receipted at the on and offload stations using the air cargo manifest. For unit moves operated in accordance with Defense Transportation Regulation (DTR), Part III, Mobility, classified or sensitive cargo movement is normally manifested utilizing the DD Form 2130-2, **C-130A/B/E/H Cargo Manifest** or similar automated product (such as CALM or AALPS), and will normally be accompanied by a unit courier. However, if classified/sensitive unit cargo is offered without an accompanying courier, the DD Form 1907, **Signature Tally Record**, must be used.

6.38.1.1. Defense Courier Service (DCS) couriers coordinating with the AC are authorized to designate officer or enlisted, (E-5 and above) crewmembers on military aircraft as couriers to escort and safeguard courier material when other qualified personnel are not available. Qualified passengers, if carried, are designated prior to designating crewmembers. The following restrictions apply:

6.38.1.1.1. Primary crewmembers will not be designated couriers without the consent of the AC.

6.38.1.1.2. Crewmembers on aircraft scheduled to make an extended enroute stop at a location where DCS couriers cannot provide enroute support will not be designated as couriers.

6.38.2. During stops at enroute locations supported by DCS stations, DCS couriers are required to meet designated couriers, guard and protect the material.

6.38.2.1. During unscheduled enroute stops crewmembers may place courier material in temporary custody of the following agencies in descending order of priority.

6.38.2.1.1. DCS courier.

6.38.2.1.2. TOP SECRET control officer of the US armed forces.

6.38.2.1.3. US Department of State Diplomatic Courier.

6.38.2.1.4. US Department of State activity.

6.38.2.1.5. US military guards.

6.38.2.1.6. US DOD civilian guards.

6.38.3. If unable to follow the itinerary to the destination of the courier material, or material is lost, stolen or otherwise compromised, report circumstances to the nearest Defense Courier Station and notify the local US military commander or US Government activity.

6.38.4. Life or death urgency shipments consist of biological or other medical supplies of such urgency that human life is dependent upon immediate receipt. Shipments will be manifested separately and the manifest annotated with the words LIFE OR DEATH URGENCY. All shipments will be handled on a hand-to-hand receipt basis, using either the air cargo manifest or the DD Form 1907, **Signature Tally Record**, for unit moves. The AC will be briefed on the urgency of the shipment and be made the custodian during flight.

**6.39. Passenger Policy** . DoD 4515.13-R, *Air Transportation Eligibility*, establishes criteria for passenger movement on DoD aircraft. It defines five categories of passenger travel: space-available, aeromedical evacuation, orientation, public affairs, and space-required. AFI 11-401 provides further guidance on orientation and public affairs travel. Refer to these publications directly for details not addressed in this instruction. In all cases, passengers will be manifested on DD Form 2131, **Passenger Manifest**.

**NOTE:** See paragraph 3.3. for ACM policy.

6.39.1. Space-available. DoD 4515.13-R, *Air Transportation Eligibility*, allows authorized passengers to occupy surplus seats on DoD aircraft after all space-required passengers have been accommodated. Required documentation is listed in DoD 4515.13-R. Passengers process through the passenger terminal. Wing or Group CCs or COMAFSOF may approve space-available travel on non-mission configured EC-130 (SJ) and C-130J BAI aircraft after careful consideration of mission requirements and sensitivities. EC-130 (CS) and mission configured EC-130 (SJ) aircraft will not be used for space-available travel.

6.39.1.1. Restrictions.

6.39.1.1.1. Both pilots must be fully qualified. Wing CCs or the COMAFSOF may approve inflight refueling on a case-by-case basis. All other mission/training events and simulated emergency procedures (EP) are prohibited.

6.39.1.1.2. With space-available passengers on board, takeoff, climb out, flight under actual instrument conditions, approach, and landing may be made by either the pilot or the copilot. Only qualified pilots (current and valid Form 8 for crew position) will occupy pilot seats with passengers on board the aircraft.

**EXCEPTION:** A pilot regaining currency under direct IP supervision (in the seat at the controls) may also fly with passengers on board.

6.39.2. Aeromedical Evacuation. Defined as the movement of patients by air. Specific guidance on eligibility and documentation is contained in DoD 4515.13-R. The commander of USTRANSCOM is the single manager for policy and procedure.

6.39.2.1. Restrictions. If tasked to conduct aeromedical evacuation, both pilots must be fully qualified. AR may be performed if required for mission accomplishment after coordination with tasking authority. All other mission events and simulated EPs are prohibited.

6.39.3. Orientation. AFI 11-401, *Aviation Management*, contains specific details on the Air Force Orientation Flight Program. There are four categories of orientation flight: incentive flights, distinguished visitor flights, familiarization flights, and spouse orientation flights. Authorized participants and approval authority are contained in AFI 11-401, Table 1.1. Document authorization by letter and manifest on an AF Form 2131. Requests for approval will include the mission profile and mission events to be accomplished. Forward all requests through stan/eval channels.

6.39.3.1. Restrictions:

6.39.3.1.1. For spouse orientation, comply with restrictions in AFI 11-401 and MAJCOM supplements. Additionally, AR and threat maneuvers are prohibited.

6.39.3.1.2. For other orientation categories, both pilots must be fully qualified. Wing/Group CCs or the COMAFSOF may approve AR on a case-by-case basis. Simulated EPs are prohibited. All other mission events may be conducted as approved by approval authority. Passengers will be seated with belts fastened during threat maneuvers.

6.39.4. Public Affairs Travel. Defined as travel in the interest of adding to the public understanding of DoD activities. AFI 11-401 contains specific details on the Air Force Public Affairs Flight Program. Authorized participants and approval authority are contained in AFI 11-401, Table 1.1. Document authorization by letter and manifest on a DD Form 2131. Requests for approval will include the mission profile and mission events to be accomplished. Forward all requests through public affairs channels.

6.39.4.1. Restrictions. Both pilots must be fully qualified. Wing or Group CCs or COMAFSOF may approve AR on a case-by-case basis. Simulated EPs are prohibited. All other mission events may be conducted as approved by approval authority. Passengers will be seated with belts fastened during threat maneuvers.

6.39.5. Space-required. DoD 4515.13-R lists several categories of passengers, not previously mentioned, who are authorized official travel on DoD aircraft. Apply space-available processing, approval, and restrictions from paragraph 6.39.1. and 6.39.1.1. above to all space required categories with the following exceptions:

6.39.5.1. Supported forces. A sub-category of space-required passenger defined by this instruction as foreign military and US personnel who are an integral part of the mission being performed. Approval is assumed by the mission tasking. Manifest supported forces on a DD Form 2131. Supported forces will not normally be transported on EC-130s, but Wing or Group CCs or the COMAFSOF may authorize supported forces on EC-130s on a case-by-case basis.

6.39.5.1.1. Restrictions. Both pilots must be fully qualified unless excepted by AFI 11-401. Simulated EPs are prohibited. There are no restrictions on mission events. Passengers will be seated with belts fastened during threat maneuvers. Aircraft commanders will ensure that supported forces are briefed on the mission profile and mission events before flight.

6.39.5.2. Supporting forces. A sub-category of space-required passenger defined by this instruction as US and foreign military, DoD civilians, and US civilian employees under contract to the DoD, who directly support the mission or a deployment of an AFSOC unit. This may include, but is not limited to; maintenance, communications, intelligence, logistics, fuels, and flight test personnel, unit-supporting chaplains, civilian contractors required for inflight checks or deployment support, FAA representatives, STS, fire support officers, and other military personnel who are on board to communicate/coordinate with ground forces. Off-station travel is documented by travel orders. Flights will be documented by letter of authorization from the Wing/ CC or, if deployed, the COMAFSOF. Flying squadron commanders may approve maintenance or assigned squadron personnel required for inflight mission accomplishment. 18 FLTS/CC is the approval authority for supporting forces in conjunction with test missions. When frequent local flights are necessary, commanders may issue annual authorizations by name or Air Force Specialty Code (AFSC) as appropriate. When using this option, aircraft commanders will ensure that all restrictions in the following paragraph are complied with for each individual mission. Manifest all supporting forces on a DD Form 2131.

6.39.5.2.1. Restrictions. Both pilots must be fully qualified unless excepted by AFI 11-401. Simulated EPs are prohibited. There are no restrictions on mission events. Passengers will be seated with belts fastened during threat maneuvers. Aircraft commanders will ensure that supporting forces are briefed on the mission profile and mission events before flight.

**6.40. Narcotics.** Crewmembers will ensure narcotics and other unauthorized items are not smuggled on board the aircraft. Maintain authorized narcotics in the para-rescue medical kits IAW appropriate directives.

**6.41. Military Customs Pre-clearance Inspection Program:**

6.41.1. The military customs program (DoD 5030.49-R, *Customs Inspection Program*, and AFRD 24-4, *Customs and Border Clearance*) was developed to assist the DoD and other US Government agencies in the control of narcotics, contraband, and prohibited agricultural products, and to expedite entry of DoD personnel and material into the customs territory of the United States.

6.41.2. Military Customs Inspectors may accomplish this inspection immediately prior to departure and may conduct more than one pre-clearance inspection on CONUS bound aircraft. When security considerations necessitate deviation from this policy, mission planners must coordinate with the appropriate agency to ensure the mission is not jeopardized.

**6.42. Identification Friend or Foe/Selective Identification Feature (IFF/SIF) Operations.**

6.42.1. Perform a ground check of the IFF/SIF before takeoff, using either the self-test or ground radar interrogation.

6.42.1.1. If self-test is unacceptable and radar facilities do not permit a ground check, takeoff is authorized if the IFF/SIF was operational on the previous mission. Accomplish an airborne check immediately after takeoff.

6.42.1.2. Aircraft will not depart with an IFF/SIF known to be inoperative.

**EXCEPTION:** Aircraft Commander may elect to fly a CONUS sortie with ATC Approval.

6.42.2. Use the IFF/SIF IAW **Table 6.5**.

**NOTE:** IFF/SIF mode 1, 2, and 3/A coded, once set and transmitted are unclassified and may be left in the transponder.

**Table 6.5. Worldwide IFF Chart.**

IFF MODE	NATO	LANTCOM & NOPAC BETWEEN 170E & 150E	ALL OTHER AREAS
1	IAW ACP 160, NATO SUPPS & USAFER 60-17	IAW ACP 160, US SUPP-1 (C)	
2	IAW ACP 160, NATO SUPPS	IAW ACP 160 US SUPP-1 (C) ANNEX A	
3	AS DIRECTED BY ATC	2000 ( BERMUDA – 2100 )	AS DIRECTED BY ATC OTHERWISE IAW ACP 160 US SUPP-1 (C)
4	KEYED AND ON (ALL AREAS)		

**NOTE:** Carry a Mode 4 loading device to use in the event of a rerouting or diversion, except on local training missions.

6.42.3. MODE 4. Aircrews will ensure that they have an operable Mode 4, when required for mission accomplishment. Aircrews will conduct an operational ground test of the Mode 4 (ground test assets permitting) prior to deployment overseas, or as specified in the OPORD or contingency/exercise tasking.

6.42.3.1. Prior to takeoff, an operational ground test of the mode 4 is required for the following missions (test equipment permitting):

6.42.3.1.1. All missions penetrating an ADIZ.

6.42.3.1.2. Operational missions

6.42.3.1.3. Training missions requiring positive electronic identification.

6.42.3.1.4. ATO missions, where safe passage procedures are implemented.

6.42.3.2. Attempt to fix an inoperable mode 4 prior to takeoff. Except when the aircraft will transit an area where safe passage procedures are implemented, do not delay takeoff nor cancel a mission for an inoperable mode 4 under the following conditions:

6.42.3.2.1. Missions generated in the boundaries of the 48 contiguous states that do not plan to penetrate or exit the CONUS ADIZ.

6.42.3.2.2. Non-training peacetime missions where cancellation or return to base (RTB) for mode 4 failure would seriously degrade effectiveness (i.e. disaster relief, SAR, aeromedical evacuation, etc.).

6.42.3.3. Conduct an in-flight check of the Mode 4 on all missions departing the CONUS for overseas locations. Aircrews can request the mode 4 interrogation check through NORAD on UHF frequency 364.2.

6.42.3.4. Aircraft with an inoperable mode 4 will continue to the intended destination. Repairs will be accomplished at the first destination where equipment, parts, and maintenance technicians are available. In theaters where safe passage is implemented, aircraft will follow procedures for inoperable mode 4 as directed in the applicable airspace control order, ATO, or communications plan.

6.42.3.5. Ground and in-flight checks of the Mode 4, when conducted, are a mandatory maintenance debrief items. Crews will annotate successful and unsuccessful interrogation of the mode 4 on all aircraft forms (AFTO Form 781A).

6.42.3.6. Aircrews will carry COMSEC equipment and documents required to operate the Mode 4 on missions when required for mission accomplishment. Prior to departing for any destination without COMSEC storage facilities, crews will contact their local COMSEC managers for guidance.

### ***Section 6D—Departure***

**6.43. TOLD Data.** Pilots and copilots will derive TOLD from the mission computer and use the **C-130 TOLD Card** published in T.O. 1C-130J-1-1 or card locally developed by the unit Standardization/Evaluation to display the data. A pilot crewmember will crosscheck the **C-130 TOLD Card** for accuracy by using the performance manual or approved tabulated data. As a minimum, the person checking the data will:

6.43.1. Verify the gross weight independently from the **C-130 TOLD Card**.

6.43.2. Crosscheck the air minimum control  $V_{mca}$  (one engine inop in ground effect), takeoff, and landing speeds.

6.43.3. Review and compare the computed distances or ground roll with the actual conditions and runway available.

**6.44. Departure Briefing.** The pilot making the takeoff will brief the crew IAW the flight manual.

**6.45. On-Time Takeoffs.** Mission departures are normally considered “on time” if the aircraft is airborne no later than 30 minutes after the scheduled takeoff time.

6.45.1. Early departures are authorized provided local facilities, down-range facilities, aircrew and mission impact are evaluated and no adverse effect will result.

6.45.2. AR and Mission Requirements. Scheduled takeoff time may be adjusted as necessary to meet the AR rendezvous control time (e.g. ARCT, RZCT) or mission on-station time. Notify scheduling and controlling agencies of any deviations affecting the control or on-station time.

**6.46. Departure Monitoring.** The FSO and pilot not flying the aircraft will back up the pilot and report any deviations from the planned departure. When radar facilities are available, departures will be radar monitored to the maximum extent possible. During day IMC and all night departures the FSOs primary responsibility is aircraft position awareness and terrain clearance.

### ***Section 6E—Enroute***

**6.47. Oxygen Requirements.** In addition to the oxygen requirements specified in AFI 11-202V3, or:

6.47.1. Crewmembers occupying a crew station will have an oxygen mask connected and readily available for use before engine start and until engine shutdown. Prior to flight, crewmembers will accomplish a communications and operations check of their oxygen masks.

6.47.2. All crewmembers will use supplemental oxygen for flight when the cabin altitude exceeds 10,000 feet MSL. Walk-around bottles do not satisfy this requirement. When oxygen is not available to other non-crewmembers, flight between 10,000 - 13,000 feet MSL is authorized for a maximum of 3 hours, if required.

6.47.3. Crewmembers who do not have access to the aircraft oxygen system will have an EPOS within arm's reach for pressurized flights above flight level (FL) 250. Prior to flight, visually inspect the EPOS to ensure it contains an adequate supply of oxygen.

**6.48. Flight Progress .** Use all available navigational aids to monitor mission computer and navigation systems performance for maintaining aircraft position and course centerline. Immediately report malfunctions or any loss of navigation capability, which degrades centerline accuracy to the air traffic management/controlling facility.

6.48.1. Prior to oceanic flight, the FSO will plot the oceanic portion of the flight on an appropriate chart. Annotate the chart with the mission number, preparer's name, and date. If practical, charts may be reused.

6.48.2. Anytime waypoint data is inserted into the mission computer, cross check both the coordinate information and the distances between waypoints against the flight plan.

6.48.3. If a revised clearance is received, record and plot the new route of flight on the chart.

6.48.4. Operations in International/Territorial Airspace. (See FLIP, FCG, AP, and MDS series instruction for further guidance) US military aircraft and DoD personnel entering another nation to conduct US government business therein must have the approval of the foreign government concerned to enter their airspace. Foreign clearances for US international air operations are obtained through US officials known as Defense Attaché Officers (DAOs).

6.48.4.1. There are essentially two types of airspace: international airspace and territorial airspace. International airspace includes all airspace seaward of coastal states' territorial seas. Military aircraft operate in such areas free of interference or control by the coastal state. Territorial airspace includes airspace above territorial seas, archipelagic waters, inland waters, and land terri-

tory, and is sovereign airspace. Over flight may be conducted in such areas only with the consent of the sovereign country.

6.48.4.2. Consistent with international law, the US recognizes sea claims up to 12 NMs. Diplomatic constraints and/or a lack of diplomatic clearances usually result in missions operating in international airspace. Therefore, it is imperative sufficient information be provided far enough in advance to allow compliance with FCG requirements established by the countries concerned. The US does not normally recognize territorial claims beyond 12 NMs; however, specific guidance from certain US authorities may establish limits which differ from the standard.

6.48.4.3. Flight Information Region (FIR). An FIR is defined as an area of airspace within which flight information and related services are provided. An FIR does not reflect international borders or sovereign airspace. Aircraft may operate within an established FIR without approval of the adjacent country, provided the AC avoids flight in sovereign airspace.

6.48.4.4. Aircrews on a flight plan route, which takes them from international airspace into territorial airspace, for which approved aircraft clearances were obtained, should not amend entry point(s).

6.48.4.5. Violations of foreign sovereignty result from unauthorized or improper entry or departure of aircraft. Aircrews should not enter into territorial airspace for which a clearance has not been duly requested and granted through diplomatic channels.

6.48.4.6. Air traffic control agencies are not vested with authority to grant diplomatic clearances for penetration of sovereign airspace where prior clearance is required from the respective country. Aircraft clearances are obtained through diplomatic channels only.

6.48.4.7. In the event air traffic control agencies challenge the validity of a flight routing or attempt to negate existing clearances, pilots must evaluate the circumstances. The normal response will be to attempt to advise the air traffic control agency that the aircraft will continue to planned destination, as cleared in international airspace. The key phrase is "in international airspace." Safety of flight is paramount in determining mission continuation. Under no circumstances should aircrews construe a clearance, which routes their mission over sovereign airspace that was not approved through diplomatic channels prior to mission departure, as being valid authorization.

6.48.4.8. Aircrews flying missions which require unique or specially developed routing will normally be briefed at home station, onload station, and/or by the last C2 facility transited prior to performing the critical portion of the mission.

**6.49. "Due Regard" Procedures.** When a unit commander authorizes a mission to be flown in international airspace over the high seas and inflight operational requirements conflict with ICAO rules and procedures, the aircraft commander may make the decision to proceed using "due regard" procedures IAW FLIP General Planning. Military flight operations including, but not limited to, military contingencies, politically sensitive, classified, and/or combat missions which do not conform to ICAO procedures may be conducted under the "Due Regard" or "Operational" prerogative for military aircraft. Due Regard obligates the military aircraft commander to be his own Air Traffic Control agency and separate his aircraft from all other air traffic. The aircraft shall, be under radar surveillance and have radio communications with an airborne or surface radar facility, or be equipped with onboard radar which provides for a level of safety equivalent to that normally given by ICAO Air Traffic Control agencies; or be operating in Visual

Meteorological Conditions. Flight following procedures for SAR must be coordinated in advance for aircrews operating under Due Regard.

**6.50. Inflight Meals.** The pilot and the copilot should not eat meals within 90 minutes of each other, before or during flight, if the meals are prepared from the same vendor and consist of the same menu items.

#### **6.51. Communications .**

6.51.1. HF Communications (according to AFR 700-20). Confine message traffic to essential operational matters. Perform an HF radio ground check prior to takeoff if the use of HF radio may be required for ATC or C2 communications. Establish HF contact before going out of UHF and VHF range. If unable to establish HF contact with the controlling HF station and an alternate means of relay of ATC information in oceanic areas is not available, return to the nearest suitable support base.

6.51.2. General. Accomplish all communications IAW FLIP or as directed by the controlling agency. Provide ARTCC position and weather observations when required. If unable to contact an ATC agency, attempt relay through the GLOBAL HF stations.

6.51.3. AF Form 72, **Air Report (AIREP)**. When directed by departing weather facility, take and record an AIREP at each position report over a Category I Route. Identify inaccurate CFP winds by special report if the average wind for a route segment exceeds either 30 degrees error in wind direction or 25 knots in wind speed. Turn in completed AF Form 72 to the destination USAF weather facility.

6.51.4. CIRVIS and Other Reports. Report all vital intelligence sightings from aircraft as indicated in FLIP planning or the Flight Information Handbook (FIH).

6.51.4.1. Inflight harassment or hostile action against EC-130J aircraft. Aircraft subjected to harassment or hostile action by foreign aircraft will immediately contact the nearest USAF air and ground voice facility and report the encounter. Include aircraft nationality, type, insignia, or any other identifying features; note position, heading, time, speed when harassed, and the type of harassment. Request relay of the report to the nearest C2 agency. Also attempt to contact the nearest command post when in UHF and VHF range.

6.51.4.2. Other incidents will be reported as indicated in JCS Pub 6, Volume V and AFM 10-206, *Operational Reporting*.

**6.52. Inflight Emergency Procedures .** Report deviations from directives that may occur as a result of an emergency in accordance with AFI 11-202, Volume 3 and this instruction.

6.52.1. Notification of Controlling Agencies. When practical after completing aircraft emergency action checklists and associated actions, crews should furnish the controlling agency and appropriate C2 agency a description of the difficulty, assistance required, intentions, and any other pertinent information.

6.52.2. Emergency Landing. Aircrews must be prepared to divert to the nearest suitable airfield. FSOs must be ready to provide pertinent information including headings, distance, and frequencies.

6.52.3. Turnaround Procedures. When a turnaround is necessary, use procedures in FLIP. Maintain visual flight rules (VFR), reverse course, climb or descend to a VFR altitude or flight level and request ATC clearance. If unable to maintain VFR, obtain an ATC clearance before reversing course. A turn-

around under IFR conditions, without ATC approval, will be made only after a thorough evaluation of the seriousness of the emergency, general traffic density, and known traffic operating in the immediate area. Normally, a climb or descent (with minimum change in altitude) to a VFR altitude or flight level will result in minimum exposure to other aircraft.

6.52.4. A CONFERENCE SKYHOOK may be initiated when additional expertise is necessary to cope with emergencies or other conditions. Communications procedures are as follow:

6.52.4.1. Local Area. When in UHF or VHF range, initiate the conference over appropriate frequencies.

6.52.4.2. Enroute. When out of UHF or VHF range, use HF radios to establish a phone patch with the nearest or controlling C2 center as appropriate.

6.52.4.3. Provide the following information when time permits.

6.52.4.3.1. Narrative description of the situation to include actions taken by the crew and the intentions of the AC.

6.52.4.3.2. What assistance is being requested

6.52.4.3.3. Fuel on board and hours of endurance.

6.52.4.3.4. Position.

6.52.4.3.5. Altitude and flight conditions.

6.52.4.3.6. Number of personnel and DVs on board.

6.52.4.3.7. Qualification of AC.

6.52.4.3.8. Planned landing base.

6.52.4.3.9. ETA at landing base.

**6.53. Need for Medical Assistance .** When a person aboard the aircraft requires medical care, inform the station of next intended landing in sufficient time so medical personnel may meet the aircraft. The request will include the patient's sex, approximate age, and the nature of the medical problem.

**6.54. Continuing Flight with an Engine Loss.** A flight may proceed on 3 engines to its destination if 2-engine capability exists, favorable operating conditions prevail both en route and at the point of intended landing, and a suitable alternate airfield is available at all times. If these conditions cannot be met, the flight will terminate at the nearest facility (preferably military), which in the judgment of the aircraft commander offers safe and favorable operating conditions.

**6.55. Weather Forecasts .**

6.55.1. It is the pilot's responsibility to obtain the latest destination weather prior to descent or landing.

6.55.2. The primary means is any USAF base weather station via Pilot Meteorologist Service (PMSV) or through a USAF Global High Frequency System aeronautical station.

6.55.3. For aircraft flying into Europe, the preferred contact for weather information east of 10 degrees west longitude is through any HF aeronautical station to the USAF Weather Support Unit at Ramstein (USAFE Metro).

6.55.4. For aircraft flying into the Pacific theater, the preferred alternate contact for weather information west of 140 degrees west longitude is through an HF aeronautical station to Hickam AFB, HI.

6.55.5. When operating outside the CONUS, monitor HF aeronautical weather broadcasts. Times and frequencies are contained in the FLIP Flight Information Handbook. During contingency operations or exercises, use HF aeronautical weather broadcasts to support silent ocean crossings.

6.55.6. The ATC system can provide weather information to enroute aircraft.

6.55.6.1. The ARTCC have a limited capability to provide weather information to enroute aircraft within CONUS.

6.55.6.2. SIGMET (significant meteorological information) advisories will be transmitted from the servicing ATC unit. Crews will consider all SIGMETs valid for their aircraft until verified as not applicable with a military METRO service.

**6.56. Low Altitude Overwater Operations.** The accumulation of salt spray on windshields and side windows is a factor, which must be considered for low-altitude overwater flight. Windshields on aircraft equipped with windshield washers can be cleared; however, salt deposits on side windows will continue to restrict lateral visibility, possibly jeopardizing flying safety diminishing search effectiveness. Weigh the above factors against mission urgency prior to descent below 500 feet, when heavy seas or high surface winds exist. In some cases, it will be preferable to fly at a higher altitude to avoid this hazard.

### ***Section 6F—Arrival***

**6.57. Crew Coordination.** The pilot flying the approach will brief the crew on the descent, approach, and landing IAW the flight manual. The other pilot and FSO will monitor the approach and report any deviations from prescribed procedures. Crewmembers will confine their activities to aircraft operation, descent and approach monitoring, and checklist accomplishment from the initial descent point to block in. Under no circumstances will crewmembers deviate from these duties except for inflight emergencies.

### **6.58. Descent and Approach .**

6.58.1. Prior to descent into unfamiliar areas, appropriate terrain charts ONC, TPC, JOG, or Sectional Aeronautical Chart, should be reviewed to increase aircrew situational awareness of obstructions. Primary crew members will not be involved in duties other than aircraft operations, descent and approach monitoring, and required checklist items from the initial descent point to landing.

6.58.2. The “Descent Checklist” will be called for upon receiving clearance for initial descent. The desired result is to separate the “Descent Checklist” and the “Before Landing Checklist” by approximately 10 minutes to allow for proper cool down of special mission equipment. The entire crew will monitor the primary interphone once the “Descent Checklist” is initiated.

6.58.3. To the maximum extent possible, all available nav aids will be used for approaches. The primary communications radio will be announced if changed (i.e., VHF 1, UHF 2, etc.).

6.58.4. A backup approach (if available) will be briefed for each approach.

6.58.5. During all instrument approaches, the FSO will have the appropriate approach plate open and monitor course, timing, altitude, and the primary radio. The FSO will maintain position and terrain clearance awareness using all available means. The FSO will be prepared to brief high terrain and provide obstacle clearance data.

6.58.6. Night and Marginal Weather Operations. Fly a precision approach, if available, at night or during marginal weather. If a precision approach is not available, fly any available approved instrument approach. During night VFR conditions, if an approved instrument approach is not available, a visual approach may be flown. On training and evaluation flights at familiar fields, pilots may fly non-precision approaches or VFR traffic patterns to accomplish required training and evaluations. The pilot not flying the approach will monitor any approach when practical to enhance safety.

## **6.59. Instrument Approach Procedures.**

6.59.1. Fly instrument approaches to maintain proficiency and to positively identify arrival airports. Visual approaches are authorized to maintain visual landing proficiency. Use radar monitoring when feasible.

6.59.2. Advise ATC when flying a coupled approach. For a coupled approach, assume manual control at or above published DH for a precision approach or descent out of the MDA for a non-precision approach.

6.59.3. The following publications are authorized if an acceptable DoD FLIP (SID or Terminal Approach) is not available.

6.59.3.1. National Aeronautical Charting Organization (NACO) U.S. Terminal Procedures.

6.59.3.2. Host Government Instrument Procedures. These products must be reviewed by a terminal instrument procedures (TERPS) office and approved by HQ AFSOC/DO. Approval will include minimums for the approach and restrictions applicable to the departure.

6.59.3.3. Any product not published in a DoD or NACO FLIP document such as Jeppesens or Host Government instrument products are considered published/authorized only after a TERPS review and approval by HQ AFSOC/DO. Overseas units should submit these products to their theater MAJCOM TERPS office for review. Forward their recommendations through stan/eval channels to the HQ AFSOC/DO for final approval.

6.59.4. If the minimum altitude is not adequately depicted on an instrument approach procedure, or chart and terrain clearance is not confirmed by ATC radar, continue to the initial approach fix at or above the minimum altitude depicted on the en route chart and complete the descent to the initial approach altitude in the holding pattern.

6.59.5. Instrument approach RVR/visibility and, if required, ceiling minimums will be as published for a category "C" aircraft. If approach speeds exceed 140 knots, the minimums for category "D" will be used. Prior to starting an instrument approach, or beginning an en route descent, pilots will confirm that existing weather is reported to be:

6.59.5.1. At or above required visibility for a DoD or National Oceanic and Atmospheric Administration (NOAA) precision approach.

6.59.5.2. At or above required ceiling and visibility for all other approaches. For approaches with no published ceiling requirement (for example Jeppesen approaches), the minimum required ceil-

ing shall be computed by taking the published HAA or HAT and rounding it up to the nearest one hundred feet or as determined by MAJCOM TERPS review. For example, a Jeppesen VOR approach with a published HAA of 642 feet would require an existing ceiling of 700 feet (plus the published visibility) prior to commencing the approach or en route descent.

**NOTE:** Pilots shall increase the published visibility minimums of an instrument approach by  $\frac{1}{2}$  SM or as noted in NOTAMs, on ATIS, or on the approach plate, when the runway approach lighting system (ALS) is inoperative. (This applies only to the ALS itself, not to VASIs, PAPIs, and other lights that are not a component of the ALS.)

6.59.5.3. If full flight instrumentation is not available and operational, aircraft are limited to a DH/MDA based on a HAT of 300 feet and RVR 40, or  $\frac{3}{4}$  mile visibility (1220 meters) with no RVR.

**NOTE 1:** Full flight instrument for a Category I ILS is dual flight displays as stated [Table 4.12. and 13](#), including complete differential pressure instruments, heading/compass systems, and attitude indicators in the pilot and copilot positions.

**NOTE 2:** Full flight instrumentation for a PAR is complete differential pressure instruments, heading/compass systems, and attitude indicators in the pilot and copilot positions.

6.59.6. Prior to starting an instrument approach, pilots will confirm their aircraft can meet or exceed all climb gradients specified in the missed approach procedure, based on the number of engines operating when the approach is begun. If missed approach climb charts are not available, use the takeoff obstacle clearance charts. If unable to meet required climb gradients, pilots must coordinate alternate missed approach procedures with ATC, which will ensure terrain clearance prior to commencing the approach. If this is not possible, do not attempt the approach.

6.59.7. If ceiling is below the value depicted for the published DoD or NOAA precision approach but visibility is at or above the authorized minimums, ensure compliance with all [Chapter 12](#) fuel requirements to include 2,000 lbs missed approach fuel, prior to initiating en route descent, penetration, or approach.

6.59.8. For a precision approach, the DH will provide a height above touchdown of 200 ft or higher. For PAR approaches, visibility will be no lower than RVR 2400 (730 meters) or  $\frac{1}{2}$  mile visibility (800 meters) with no RVR readout available.

6.59.9. Circling Approach. MDA will be as published for category aircraft. If the minimums are not published by category, the minimum altitude will be as published, but in no case lower than the value indicated below, plus the published airport elevation:

6.59.9.1. Category C - 500 feet -  $1 \frac{1}{2}$  SM.

6.59.9.2. Category D - 600 feet - 2 SM.

6.59.10. Established on a Segment of the Approach. If established on a segment of the approach or being radar vectored to final approach, and the weather is reported or observed to be below approach minimums, the AC has the option of continuing the approach to the MAP/DH. If deciding to abandon the approach, level off (or descend if a lower altitude is required for the missed approach procedure). Comply with the last assigned clearance until a new or amended clearance is received.

6.59.10.1. Do not continue the approach below minimums unless the aircraft is in a position to make a safe landing and the runway environment is in sight.

6.59.10.2. If the approach is continued, ACs must plan to have sufficient fuel available to complete the approach and missed approach, and proceed to a suitable alternate with normal fuel reserve.

6.59.10.3. The AC has final responsibility for determining when the destination is below designated minimums and for initiating proper clearance request.

6.59.11. An AC may hold at a destination that is below landing minimums, but forecast to improve to or above minimums provided:

6.59.11.1. The aircraft has more fuel remaining than that required to fly to the alternate and hold for the appropriate holding time, and the weather at the alternate is forecast to remain at or above alternate filing minimums for the period, including the holding time.

6.59.11.2. The destination weather is forecast to be at or above minimums before excess fuel will be consumed.

**6.60. Wake Turbulence Avoidance.** Pilots must exercise the discipline necessary to ensure wake turbulence avoidance criteria are observed during flight operations. Acceptance of a visual or contact approach clearance, or instructions to follow an aircraft, is acknowledgment that the pilot will maintain a safe interval for wake turbulence avoidance. The following instructions expand wake turbulence avoidance criteria, but do not replace guidance in DoD FLIP planning.

6.60.1. For VFR traffic patterns behind heavy jets, follow the “Vortex Avoidance Procedures” in FLIP General Planning.

6.60.2. Low approaches behind heavy jets will be flown no lower than that altitude which ensures the aircraft remains well above the flight path of the heavy jet.

6.60.3. Pilots operating under IFR into US civil airports will request 5 miles separation under radar control or 2 minutes non-radar control from heavy jets (departure and arrival).

### ***Section 6G—Post-flight***

#### **6.61. Engine Shutdown:**

6.61.1. Aircrews should make every effort to use the following engine shutdown guidance. When terminating the sortie, allow engines to cool in low speed ground idle for approximately two minutes before shutdown. This procedure will significantly reduce the amount of fuel nozzle coking on the engines.

6.61.2. After engine shutdown, thunderstorm/flight deck dome light will remain off until the propellers stop rotating.

6.61.3. Except for loadmasters performing crew duties, no passenger or crewmember will exit the aircraft until completion of the “Engine Shutdown” checklist.

6.61.4. The complete AFTO Form 781 will normally be reviewed by the maintenance debriefer prior to the aircrew departing the aircraft.

## 6.62. Classified Equipment and Material .

6.62.1. Equipment. When classified equipment is onboard, ensure the C2 agency or base operations office is aware of the requirement for aircraft security according to [Chapter 7](#) of this AFI. At bases not under jurisdiction of the Air Force, ensure the aircraft and equipment are protected. AFI 31-401, *Information Security Program Management*, provides specific guidance concerning the security of various levels of classified equipment aboard aircraft.

6.62.2. Material. Ensure COMSEC and other classified materials are turned in at destination and receipts are obtained for COMSEC and classified material. The on-site C2 center will provide temporary storage for COMSEC and other classified materials during enroute stops. If a storage facility is not available, the aircraft safe or gun storage box may be used for material classified up to and including SECRET. Encrypted COMSEC will only be transferred to authorized DoD personnel.

6.62.3. Clear classified information stored in navigation systems, and mission computers (MC).

6.62.4. Clear all transmission security (TRANSEC) systems, such as secure voice and IFF.

6.62.5. In an emergency, destroy or damage classified material and equipment prior to crash landing or bailout, if possible.

**6.63. Impoundment of Aircraft.** If an aircraft is involved in a serious incident, the aircraft commander should impound the aircraft immediately and contact the AFSOC Command Center or controlling agency for further instructions.

## Section 6H—Debriefing

**6.64. Maintenance.** Complete the AFTO Form 781 after each flight. After landing, crewmembers debrief maintenance personnel on the condition of the aircraft, engines, avionics equipment, and all installed special equipment as required. At stations without maintenance support, when a maintenance requirement exists the AC will ensure a thorough debrief is provided to the C2 agency, and the MAJCOM Logistics Readiness Center is notified prior to entering crew rest.

6.64.1. Aircrews are not qualified to accomplish the required maintenance inspections. In those instances where maintenance personnel are not available, the aircrew will enter a red dash symbol in the AFTO Form 781H, updating current status, and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (i.e., preflight, thru-flight, basic post-flight) is overdue.

6.64.2. The aircraft commander reviews the AFTO 781, determines those discrepancies considered as mission essential and indicates them by entering “ME” (mission essential) in block letters in the lower left hand corner of the AFTO Form 781A discrepancy block. Use “MC” (mission contributing) to indicate any discrepancies that, if corrected, would substantially contribute to mission accomplishment, but are not mission essential.

6.64.3. Use block 14 (discrepancy) of the AFTO Form 350, **Repairable Item Processing Tag** with an AFTO Form 781 entry to identify and tag any defective item of equipment such as headsets, and thermos jugs.

6.64.4. Enter “Aircraft subjected to salt spray” on the AFTO Form 781A any time the aircraft is flown under 1,000 feet AGL over salt water, excluding takeoffs and landings.

6.64.5. Ensure fuel on-loaded or off-loaded during refueling is entered in the AFTO Form 781H, **Aerospace Vehicle Flight Status and Maintenance**.

**6.65. Weather.** The aircraft commander or a representative will pass significant information to the appropriate weather agency.

**6.66. Intelligence.** Debrief intelligence when applicable.

**6.67. Crew Debriefing.** The aircraft commander will conduct a debriefing after each mission. The debriefing will include all applicable crewmembers so that common problems can be discussed and resolved. Crewmembers may be excused from the debriefing at the discretion of the aircraft commander.

6.67.1. As a minimum, the aircraft commander, FSO, and MSO will debrief immediately after the flight. They will ensure that all required mission forms, logs, and classified material have been properly processed.

6.67.2. The MSO may debrief ECS crewmember inflight while returning from the mission or after the flight.

**6.68. Aircrew Notification Procedures.** When transiting installations, the aircraft commander will establish a point of contact with the command post, base operations, or local airport manager, when the crew is billeted in off-base quarters. The aircraft commander will be notified immediately in case of incident or emergency affecting the safety or security of the aircraft.

### ***Section 6I—Miscellaneous***

#### **6.69. Border Clearance and Inspections:**

##### 6.69.1. Normal Operations:

6.69.1.1. **Border Clearance Responsibility.** The border clearance responsibility will be as designated by the base or area command IAW AFI 24-401, *Customs-Europe*, AFI 24-402, *Customs-Pacific*, AFI 24-403, *Customs-Southern*, and AFI 24-404, *Customs-Domestic*. The unit dispatching the mission is normally responsible for arranging the border clearance of its aircraft.

6.69.1.2. **AC Responsibility.** Where designated personnel are not assigned, border clearance is the responsibility of the AC. Although many of the duties may have been assigned to ground personnel and the loadmaster, the AC retains ultimate responsibility. When an aircraft is unloaded at a base without a border clearance function, the AC is responsible for the following:

6.69.1.2.1. Crewmembers, troops, and passengers possess current passports and valid visas, if required.

6.69.1.2.2. Crewmembers, troops, and passengers have current certificates of immunization (shot record).

6.69.1.2.3. Cargo entry documents are in proper order.

6.69.1.2.4. Departing or entering the United States through a location where a border clearance can be obtained.

6.69.1.2.5. Border clearance for aircraft cargo, passengers, crew and baggage, if required, is obtained before takeoff to a foreign area, or after arrival from a foreign area.

6.69.1.2.6. Spraying the aircraft. (see FCG and paragraph 6.70. of this chapter).

6.69.1.3. Obtain Customs, Agriculture, and Public Health clearance, as required, prior to opening any doors, hatches, or windows, other than the crew entrance door, or enplaning and deplaning personnel. Proceed directly from the aircraft to Customs, Immigration, or Agricultural inspection for processing when required by the inspector.

#### 6.69.2. Procedures for US Entry.

6.69.2.1. Enroute, the loadmaster will distribute personal customs declarations (when not accomplished by passenger services) to all passengers, troops, and crewmembers. The loadmaster will also brief passengers and crewmembers on customs regulations, and prepare and compile necessary border clearance forms for the AC's signature, to include the Customs Form 7507, **General Declaration (Outward/Inward)**.

6.69.2.2. Enroute to the US, notify the base of intended landing of any change in ETA to ensure that border clearance is accomplished as soon as possible after landing.

6.69.2.3. Obtain a permit to proceed when military necessities require that an aircraft, which has landed in the United States for customs clearance, to proceed to another base in the US to obtain border clearance. The permit delays customs inspection of cargo, passengers, and crew until arrival at the offload station, and saves intermediate offloading and reloading normally required for customs inspection. The permit to proceed is valid only to the airport of next landing, where the border clearance must be completed or a new permit issued by a customs official. Do not make intermediate stops unless required by an emergency situation or directed by AFSOC.

6.69.2.4. When an aircraft lands for a US border clearance, a US Customs representative will normally meet the aircraft to obtain the required documents. Do not deplane passengers, troops, or crewmembers unless necessary for safety or the preservation of life and property (loadmaster excepted). Do not unload until approved by customs and agriculture personnel or their designated representatives. This procedure applies to the initial landing in the US and all subsequent landings until crew, passengers, and cargo complete final border clearance.

#### 6.69.3. Inspections of US aircraft by foreign officials.

6.69.3.1. Follow USAF policy on status of military aircraft as stated in the FCG, General Information, **Chapter 3**. In substance, this policy holds that US military aircraft are immune from searches, seizures, and inspections (including customs and safety inspections) by foreign officials. In addition, ACs must be aware of and adhere to any specific FCG provisions for individual countries.

6.69.3.2. US military aircraft are sovereign. When cleared to over-fly or land in foreign territory, it is US policy to assert that military aircraft are entitled to the privileges and immunities, which customarily are accorded warships. These privileges and immunities include, in the absence of stipulations to the contrary, exemption from duties and taxation; immunity from search, seizure, and inspections (including customs and safety inspections); or other exercise of jurisdiction by the host nation over the aircraft, personnel, equipment, or cargo on board. USAF aircraft commanders will not authorize search, seizure, inspection, or similar exercises of jurisdiction enumerated

above by foreign authorities except by direction of HQ USAF or the American Embassy in the country concerned.

6.69.3.3. ACs will not permit the inspection of their aircraft by officials of any foreign government. If requested to do so, the aircraft commander and crew will deny access and seek aid from the senior AFSOC or other USAF representative, US Embassy, or consulate within the host nation. Customs or other officials will be informed of the above policy and requested to confirm their request through their own government and with US Department of State representatives. If necessary the crew will seal the aircraft and will enter into crew rest; departure intentions will be canceled until resolution of the matter by appropriate authority. Inform command and control authorities using the fastest available means, should this situation occur.

6.69.3.4. When confronted with a search request by foreign authorities, aircrews should consider the following procedures:

6.69.3.4.1. In most cases, search attempts may be stopped by a statement from the AC to the foreign officials that the aircraft is sovereign instrumentality and not subject to search without consent of USAF headquarters or the US Department of State officials in the country concerned. This should be clearly conveyed in a polite manner so as not to offend foreign authorities who may honestly, but mistakenly, believe they have authority to search USAF aircraft.

6.69.3.4.2. If foreign authorities insist on conducting a search, AC should make every effort to delay the search until he or she can contact USAF headquarters (through MAJCOM C2) or the appropriate embassy officials. The AC should state that they have no authority to consent to the search and that they must relay the foreign request to these agencies for decision. Aircraft commanders should then notify these agencies of the foreign request by the most expeditious means available and follow their instructions.

6.69.3.4.3. If foreign officials refuse to desist in their search request, pending notification to USAF headquarters or the appropriate embassy, aircraft commanders should indicate that they would prefer to fly the aircraft elsewhere (provided fuel and mechanical considerations permit a safe departure) and request permission to do so.

6.69.3.4.4. If permission is refused and the foreign authorities insist on forcing their way on board an aircraft, aircraft commanders should state that they protest the course of action being pursued and that he or she intends to notify both the USAF headquarters and appropriate American Embassy of the foreign action. The AC should then allow the foreign agents on board the aircraft, without physical resistance, and thereafter report the incident to US Air Force headquarters and appropriate embassy as soon as possible. The AC should escort foreign authorities if the inspection cannot be avoided.

6.69.3.5. In all instances, specific instructions may be briefed because of sensitive cargo or equipment. These instructions and applicable provisions of classified supplements to the foreign clearance guide should be followed where applicable.

6.69.3.6. Other procedures may apply when carrying sensitive cargo or equipment. Follow these procedures and applicable portions of classified FCG supplements.

#### 6.69.4. Exercises and Contingency Operations.

6.69.4.1. General. Certain missions which do not transit normal ports of entry or exit require special procedures to expedite compliance with customs, public health, immunization, and agricul-

tural requirements. A joint memorandum of understanding, between these agencies and MAJCOM establishes certain procedures and waivers.

6.69.4.2. Implementation. Implementation of the agreement is not automatic. Traffic and border clearing agencies implement all or part of the agreement as necessary for each operation. Inspection and clearance may be accomplished at the US onload or offload base, or at the foreign onload or offload base.

#### 6.69.5. Customs Procedures.

6.69.5.1. Outbound. No requirement. Filing of Customs Form 7507, General Declaration (Outward/Inward) is waived.

6.69.5.2. Inbound. Prepare one copy, or as specified, of the following documents before arrival:

6.69.5.2.1. Two copies of the Customs Form 7507, **General Declaration** (Crewmember and passenger list included or attached, as required).

6.69.5.2.2. Cargo manifest.

6.69.5.2.3. Crewmember's Customs Declaration. Either the CF 5129, **Crew Member's Declaration**, CF 6059B, **Customs Declaration**, or DD Form 1854, **U.S. Customs Accompanied Baggage Declaration**

6.69.5.2.4. For troops out of country less than 140 days, the troop commander's certificate for examination of troop baggage.

6.69.5.2.5. One copy of the DD Form 1854, **U.S. Customs Accompanied Baggage Declaration**, or CF 6059B, **Customs Declaration** for each passenger not under command of the troop commander, to include observers, support personnel, civilians, news reporters, and crewmembers.

6.69.5.2.6. Upon arrival at a CONUS offload base, a customs representative will meet the aircraft and accept the troop commander's certificate with respect to troop baggage. Individual baggage declarations are not required. The troop commander should have inspected troop baggage.

6.69.5.2.7. Troops will debark under the observation of the customs representative with only a spot check of articles and baggage. The customs officer may elect to make a more extensive inspection.

#### 6.69.6. Public Health Procedures.

6.69.6.1. When operating from a base without a traffic officer, the AC will ensure all crewmembers and passengers are properly immunized.

6.69.6.2. Spray the aircraft if required.

#### 6.69.7. Immigration Procedures.

6.69.7.1. Outbound: No requirements.

6.69.7.2. Inbound: Submit the following to the immigration inspector if carrying civilian passengers.

6.69.7.2.1. One copy of Customs Form 7507.

6.69.7.2.2. One copy of Immigration Form I-92, Aircraft/Vessel Report.

6.69.7.2.3. One copy/set of Immigration Form I-94, Arrival/Departure Record, for each foreign national.

6.69.8. Agriculture Procedures:

6.69.8.1. Outbound: No requirement.

6.69.8.2. Inbound:

6.69.8.2.1. The command being airlifted will instruct troops that no fresh fruit, milk, milk products, vegetables, plants, plant pests, soil samples, animals, meat, and animal products can be brought into the United States. All items of troop personal gear are to be cleaned of mud before being brought aboard the aircraft. Personal gear and equipment must be examined for snails and other plant pests to prevent their accidental entry into the US.

6.69.8.2.2. Before loading, the command responsible for cargo being airlifted will clear vehicles and cargo of snails or other plant pests and of all mud and soil.

6.69.8.2.3. When required by agricultural quarantine regulations, the FCG, or higher headquarters, the aircraft will receive an aerosol treatment 30 minutes prior to landing.

6.69.8.2.4. On arrival, agricultural inspectors will inspect the aircraft after troops have disembarked. Crewmembers will assemble remains of inflight lunches for prompt removal by fleet service personnel.

6.69.8.2.5. Inspectors examine baggage, equipment, vehicles, and cargo as offloaded. Any items, vehicles, or cargo found to be contaminated will be held for such treatment as the inspector may direct (washing, steam cleaning, physical cleaning, or fumigation).

6.69.9. Military Customs Pre-clearance Inspection Program. All crewmembers will ensure compliance with Military Customs Pre-clearance requirements.

**6.70. Insect and Pest Control .**

6.70.1. ACs will ensure required spraying is accomplished according to AFJI 48-104, *Medical and Agricultural Foreign and Domestic Quarantine Regulations for Vessels, Aircraft, and Other Transports of the Armed Forces (Joint)*, Department of Defense FCG, or as directed by higher headquarters. Certify the spraying on Customs Form 7507, or on forms provided by the country transited. Aircraft should never be sprayed with passengers on board. The only exception is when mandated by the FCG.

6.70.1.1. When spraying is required, use insecticide, Aerosol D-Phenothrin-2 percent, National Stock Number (NSN) 6840-01-067-6674 (or equivalent), to spray the aircraft. Wear leather or nomex gloves while spraying.

6.70.1.1.1. Direct the nozzle toward the ceiling of the compartment or space being sprayed.

6.70.1.1.2. Spray spaces inaccessible from within the aircraft after completely loading fuel, baggage, and cargo; including baggage compartments, wheel wells, and other similar spaces.

6.70.1.1.3. Spray the cabin, cockpit, and other spaces accessible from within the aircraft after the crew is aboard and after closing all doors, windows, hatches, and ventilation openings.

**CAUTION:** If the insecticide label directs disembarkation after use, spray prior to boarding crew or passengers. Close all doors and hatches for 10 minutes after dispensing and ventilate for 15 minutes before allowing anyone on board.

6.70.1.2. Spray for 105 seconds unless longer periods are specified for the country being transited.

**NOTE:** Keep used aerosol cans separate from other trash so they may be disposed of safely.

6.70.2. When seeing any insect or rodent infestation of the aircraft inflight, notify the destination C2 agency, base operations, or airport manager of the situation before landing so the proper authorities can meet the aircraft.

6.70.3. Upon arrival, do not open cargo doors or hatches except to enplane officials required to inspect the aircraft for insect or rodent infestation. Do not onload or offload cargo or passengers until the inspection is satisfactorily completed. This procedure may be altered to satisfy mission or local requirements, as arranged by the base air terminal manager or the local C2 organization.

### **6.71. Hazardous Medical Equipment:**

6.71.1. Nonstandard equipment possessed by medical facilities using AFSOC air evacuation services should be regarded as potentially hazardous. Two types of equipment are of major concern:

6.71.1.1. Electronic medical equipment produces electromagnetic interference (EMI) which is commonly beyond the limits specified by MILSTD461A and 462, and therefore can interfere with aircraft communication and navigational equipment.

6.71.1.2. Therapeutic oxygen systems present an increased hazard of fire or explosion. A potential but real hazard is the inadvertent disruption of the cylinder neck, manifold, or regulator resulting in explosion and propulsion of the container or accessories.

6.71.2. Nonstandard electronic and oxygen equipment must be listed by manufacturer and model number in the current "Status Report on Medical Material Items Tested and Evaluated for use in the USAF Aeromedical Evacuation System, USAFSAM, Brooks AFB, TX.

6.71.3. For nonstandard electronic medical equipment, take the following precautions:

6.71.3.1. Para rescue personnel must inform the aircraft commander when nonstandard electronic medical equipment is brought on board the aircraft.

6.71.3.2. The aircraft commander must be informed of the anticipated period of use of the equipment during the mission.

6.71.3.3. The aircraft commander must be alert for any interference with aircraft communication or navigation equipment during periods of use of this equipment.

6.71.3.4. When continuous use of the equipment is required throughout the duration of the mission, flight must be restricted to VFR conditions. Furthermore, exercise additional caution on night VFR missions to ensure there are no adverse effects on navigational equipment.

6.71.4. For nonstandard oxygen equipment, take the following precautions:

6.71.4.1. All compressed oxygen equipment with exposed, unprotected cylinder neck, manifold, or regulator must be completely secured from all movement in its longitudinal and lateral axes.

6.71.4.2. Para rescue personnel must continually monitor the operation of the equipment to detect possible malfunction during exposure to altitude.

**6.72. Hazardous Material Procedures.** The term “hazardous material” as used in conjunction with air-lift operations (C-130E/H) applies to the following classes and types of materials covered by AFJI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Materials*) and includes any material which, because of its quantity, properties, or packaging, may endanger human life or property. Procedures in this paragraph apply whenever aircraft carry DoD Hazard Class/Division 1.1, 1.2, or 1.3 explosives, DOT Class A and B poisons, etiological or biological research materials, radioactive materials requiring yellow III labels, and inert devices. Also included are DoD Hazard Class/Division 1.4 explosives, oxidizers, compressed gases, flammable solids and liquids, and corrosive liquids listed in AFMAN 24-204(I), *Preparing Hazardous Materials for Military Air Shipments*.

6.72.1. Briefing. Reference AFMAN 24-204(I).

6.72.2. Cargo Documentation. Do not accept hazardous materials unless proper documentation, certification, and identification of cargo are provided. This includes transportation control number entered correctly on both the cargo manifest and the Shipper’s Declaration for Dangerous Goods.

6.72.3. Flight Planning. The aircraft commander (unless specifically briefed otherwise):

6.72.3.1. Enters “Hazardous Cargo” and the mission number in the appropriate section of the flight plan. Use remarks section of DD Form 175, **Military Flight Plan**, and other information section of DD Form 1801, **DoD International Flight Plan**.

6.72.3.2. Plans the flight to minimize over flying heavily populated or otherwise critical areas.

6.72.3.3. Prepares a departure message. The remarks section of the departure message should include the following:

6.72.3.3.1. Department of Transportation (DOT) class and DoD hazard class or division, if applicable, of hazardous material on board (Include net weight of DOT Class A or B poisons and net explosive weight (NEW) of Class A or B explosives).

6.72.3.3.2. Request for special support; e.g., isolated parking, security, technical escort teams, etc.

6.72.3.3.3. Inert devices (when applicable).

6.72.3.4. If estimated time enroute (ETE) is less than 1 hour, or if other circumstances preclude timely receipt at destination, notify base operations at the first intended landing by priority telephone of the ETA and information listed in paragraph **6.72.3.3**.

6.72.4. Before Engine Start. Ensure placards are removed. Give the controlling agency parking location, approximate engine start time, and verify that the fire fighting agency has the hazardous materials information. If not, request the following be relayed to the fire fighting agency:

6.72.4.1. DOT class of hazardous material on board and the DoD hazard class or division for explosive material on board.

6.72.4.2. Net Explosive Weight (NEW).

6.72.4.3. Request for isolated taxiing (if necessary).

6.72.4.4. Estimated time of departure (ETD).

6.72.5. En Route. Normal procedures apply. Avoid flying over metropolitan or otherwise critical areas.

6.72.6. Before Landing. Accomplish the following unless specifically prohibited by the theater commander or FLIP planning.

6.72.6.1. Contact the base operations dispatcher, control tower, approach control, or other agency specified in FLIP at least 30 minutes (or as soon as practical) before ETA to announce that hazardous materials are on board and to verify that the appropriate base support agencies have received the departure message. If not, transmit the mission number, ETA, and information listed in [6.72.3.3](#).

6.72.6.2. If landing at a CONUS civil airport without a tower, give the above information to the nearest FAA flight service station.

6.72.6.3. Request the information be relayed immediately to base operations or the civil airport manager, crash or fire protection agency, and other support activities.

6.72.7. Parking:

6.72.7.1. DoD requires aircraft carrying DoD Hazard Class or Division 1.1, 1.2, explosives, DOT Class A poisons, and certain biological agents and munitions be parked in areas isolated from personnel. Aircraft commanders are responsible for ensuring cargo is correctly identified to the tower and ground control. When aircraft are not directed to an isolated area, identify the cargo again to tower or ground control. When identification is acknowledged, the host is solely responsible for selecting the parking area. Should host procedures be questionable, submit trip reports or HRs, as appropriate, to document such occurrences.

6.72.7.2. The military host is responsible for placarding aircraft. For non-military installations, the briefing to the aircraft commander will include placarding requirements and, if required, placards will be furnished at the on-load base. The shipper must make prior arrangements with the airport manager for shipments of hazardous materials requiring placarding. The shipper is responsible for cargo identification, fire-fighting procedures, and isolated parking requirements.

6.72.8. Unscheduled Landing Due to Inflight Emergency. Transmit unclassified information to the appropriate air traffic control facility as follows:

6.72.8.1. Nature of emergency and intent to land.

6.72.8.2. Aircraft position and ETA.

6.72.8.3. Number of personnel and location in aircraft.

6.72.8.4. Fuel on board.

6.72.8.5. That hazardous materials are on board, location of the cargo, and applicable information listed in [6.72.3.3](#).

6.72.9. After Unscheduled Landing. Contact the AFSOC Command Center or theater Air Logistics Control Center (ALCC) by telephone, HF radio, or message, giving arrival notice, hazardous materials' information, and other pertinent information as required.

**6.73. Dropped Object Prevention** . If an externally dropped object is discovered, the flight crew will:

6.73.1. Notify the controlling agencies as soon as practical; include routing, altitude, weather, etc.

6.73.2. Notify maintenance at the first military station transited.

**6.74. Cockpit Voice Recorder (CVR)** . If involved in a mishap or incident, pull the CVR power circuit breaker after landing and terminating the emergency.

**6.75. Airfield Data Reports** . Aircrews transiting strange airfields or airfields where conditions may adversely affect subsequent flight will:

6.75.1. Report airfield characteristics that produce illusions, such as runway length, width, slope, and lighting, as compared to standard runways, sloping approach terrain, runway contrast against surrounding terrain, haze, glare, etc.

6.75.2. Debrief the next C2 agency transited.

**6.76. Ordnance Procedures.** Conduct the following procedures after the live firing of chaff/flares on the EC-130J aircraft:

6.76.1. After landing, taxi to the de-arm area or another suitable safe location to check for hung ordnance.

6.76.2. The loadmaster or another qualified crewmember will deplane the aircraft and check all dispensers for hung ordnance.

**NOTE:** ALE-47 or flare squibs that fail to fire are NOT considered hung ordnance.

6.76.3. If hung ordnance is found, identified by a protruding or partially ejected chaff/flare cartridge, the aircraft will remain in a de-arm area until Explosive Ordnance Disposal (EOD) personnel meet the aircraft. The aircraft must remain in the designated safe area until EOD personnel can clear all hung ordnance.

6.76.4. If hung ordnance is not found, the aircraft can proceed to the parking location.

## Chapter 7

### AIRCRAFT SECURITY

**7.1. General.** This chapter provides guidance on aircraft security and preventing and resisting aircraft piracy (hijacking) of EC-130J aircraft. AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking)*, AFI 31-101, Volume 1, *Air Force Physical Security Program*, and specific MAJCOM security publications contain additional guidance. Aircrews will not release information concerning hijacking attempts or identify armed aircrew members or missions to the public.

**7.2. Security.** The EC-130J is a priority "C" resource. Aircraft security at non-US military installations is the responsibility of the controlling agency.

**7.3. Air Force Physical Security Program.** The following security procedures will implement AFI 31-101, *The Air Force Physical Security Program*, requirements for EC-130J aircraft:

7.3.1. The aircraft will be parked in an established restricted area and afforded protection via a roving patrol and a two-person armed response capability within 5 minutes.

7.3.2. When no permanent or established restricted area parking space is available, establish a temporary restricted area consisting of a raised rope barrier, and post with restricted area signs. Provide a one-person mobile patrol, supported by a two-person security response team capable of 5-minute response. Portable security lighting will be provided during the hours of darkness if sufficient permanent lighting is not available.

7.3.3. At non-US military installations, the AC determines the adequacy of local security capabilities to provide aircraft security commensurate with this chapter. If he or she determines security to be inadequate, the aircraft will depart to a station where adequate security is available.

7.3.4. The security force must be made aware of all visits to the aircraft.

7.3.5. Security support is a continual requirement and is not negated by the presence of aircrew or ground crew members. Security force support terminates only after the aircraft doors are closed and the aircraft taxis.

**7.4. Enroute Security.** The planning agency must coordinate with the execution agency to ensure adequate enroute security is available. ACs will receive a threat assessment and enroute security capability evaluation briefing for areas of intended operation prior to home station departure and should request updates from enroute C2 agencies as required. If required, a security team will be assigned to the mission.

7.4.1. The PHOENIX RAVEN team will consist of two USAF security force members, but may include more depending on security requirements. The team's travel status is determined by MAJCOM. The team is responsible to the AC at all times, and in turn, ACs are responsible for their welfare (transportation, lodging, etc.). ACs will ensure security team members receive a full aircrew briefing.

7.4.2. Arrival. On arrival, the AC will assess the local situation and take the following actions as required:

7.4.2.1. Area patrol. Request area security patrols from local security forces. If local authorities request payment for this service, use AF Form 15, **USAF Invoice**.

7.4.2.2. Aircrew surveillance. During short ground times, direct armed crew members to remain with the aircraft and maintain surveillance of aircraft entrances and activities in the aircraft vicinity.

7.4.2.3. Inadequate security. If in the AC's opinion, airfield security is inadequate and the safety of the aircraft is in question, the AC may waive the flight duty period limits and crew rest requirements and depart as soon as possible for a base with adequate security. Report movement and intentions to the controlling agency as soon as practical. If departure is not possible, the aircrew must secure the aircraft to the best of their ability. In no case, will the entire crew leave the aircraft unattended. Crew rest requirements will be subordinate to aircraft security when the airframe may be at risk. The AC should rotate a security detail among the crew to provide for both aircraft protection and crew rest until relief is available. Request security assistance from the nearest DoD installation, US Embassy, local military or law enforcement agencies as appropriate.

7.4.3. Entry Control Procedures. Unescorted entry is granted to aircrew members and support personnel assigned to the mission who possess their home station AF Form 1199, **USAF Restricted Area Badge**, supported by an entry access list (EAL) or aircrew orders. Aircrew members and assigned crew chiefs are authorized escort authority.

7.4.3.1. Normally, non-US nationals such as cargo handlers can perform their duties under escort and should not be placed on the EAL.

7.4.3.2. Personnel not on the entry control list or aircrew orders must be escorted within the area.

## 7.5. Detecting Unauthorized Entry .

7.5.1. When parking on a secure ramp, the aircraft will normally be left unlocked/unsealed to allow ground personnel immediate access. If, in the AC's judgment, the aircraft needs to be locked and sealed in order to detect unauthorized entry, then:

7.5.1.1. Use available aircraft ground security-locking devices.

7.5.1.2. Secure the doors in a manner that will indicate unauthorized entry (e.g., tape inside of doors to airframe so that entry pulls tape loose).

7.5.1.3. Close and seal the crew entrance door (box car seal).

7.5.1.4. Wipe the immediate area around lock and latches clean to aid in investigation of a forced entry.

7.5.1.5. Report any unauthorized entry or tampering to the OSI, security police or local authorities, and the C2 agency. Have aircraft thoroughly inspected prior to flight.

7.5.2. Security awareness is crucial to effective mission accomplishment. Aircrews must always remain vigilant to their surroundings, especially at high threat, low security locations. During preflight activities, aircrews will inspect accessible areas, to include aircraft wheel wells and avionics compartments for unauthorized packages, personnel, or other unfamiliar devices. Report any suspicious items to host security forces. Aircrews will maintain a heightened security posture throughout all pre-take-off activities.

## **7.6. Preventing and Resisting Hijacking .**

7.6.1. The Air Transportation Act of 1974 and the Federal Aviation Act of 1958, as amended, vest the FAA Administrator with exclusive responsibility for the direction of law enforcement activity in aircraft hijacking situations involving all aircraft (civil and military) in flight in the United States.

7.6.2. In taking action during an aircraft hijacking situation, military forces will act under military command within the scope of their duties.

7.6.3. In the event an aircraft involved in an aircraft hijacking situation is carrying documents, equipment, or material that DoD has determined to be highly sensitive, or weapons of mass destruction, DoD will provide the FAA, and where appropriate, the FBI, with all pertinent information. Where possible, the FAA will consult and cooperate with DoD prior to directing any law enforcement activity.

7.6.4. An aircraft is most vulnerable to hijacking when the aircrew is aboard and the aircraft is operationally ready for flight.

7.6.5. A concerted effort must be made to prevent the hijacking of military or military contract aircraft by detecting potential hijackers before they board the aircraft.

7.6.6. Should preventive efforts fail, any actual attempt to hijack a military aircraft must be resisted in a manner appropriate to the situation.

7.6.7. Since air piracy may be committed by political terrorists or by individuals to whom the threat of death is not a deterrent but a stimulus, ordinary law enforcement procedures may be ineffective. Thus, successful conclusion of a hijacking situation and apprehension of the hijackers may require use of specialized law enforcement techniques and procedures.

7.6.8. Delaying actions have been most successful in overcoming hijackings without loss of life or property.

7.6.9. In the case of an aircraft carrying passengers, the primary concern is the safety of the passengers.

7.6.10. Assistance to hijacked civil or military contract aircraft will be rendered as requested by the aircraft commander and the authority exercising operational control of the anti-hijacking effort.

7.6.10.1. Responsibilities. When tasked for surveillance operations, the crew will:

7.6.10.1.1. Immediately after launch, establish radio contact with the command and control element via HF.

7.6.10.1.2. Rendezvous with the hijacked aircraft for surveillance as soon as possible after takeoff.

7.6.10.1.3. During rendezvous with the hijacked aircraft, assume a trail position out of cockpit and cabin view. Remain in an unobserved position unless otherwise directed. Safety is paramount; therefore, aircraft will maintain a 10-NM trail in Canadian airspace and 5-NM trail in all other airspace.

7.6.10.2. After direction to assume surveillance mission, continue until:

7.6.10.2.1. Fuel state dictates aborting to arrive at alternate with fuel reserves specified in this AFI.

7.6.10.2.2. Recalled by the C2 agency.

7.6.10.2.3. The hijacked aircraft's destination is determined to be a country requiring over flight clearance for the surveillance aircraft. Contact a C2 agency or command post for further direction. Until directed to over-fly sovereign airspace, maintain a 12-NM separation as specified in the FCG.

**7.7. Preventive Measures** . Commanders at all levels must ensure preventive measures are taken to minimize access to the aircraft by potential hijackers. When an EC-130J is operating away from home station, the AC will comply with the provisions of this chapter and AFI 13-207, as supplemented, are complied with.

7.7.1. Preventive measures include the following: The host station passenger processing or manifesting facility should conduct anti-hijacking inspections. Do not board passengers until the AC is fully satisfied with inspection results. In the absence of qualified passenger service representatives, the AC will ensure the anti-hijacking inspection of passengers and baggage is accomplished.

7.7.2. Medical facility commanders are responsible for anti-hijacking inspection of patients. When patients are delivered to the aircraft by civilian sources, the aircrew will perform required inspections prior to loading.

7.7.3. During exercises or contingencies in support of combat operations involving the movement of large groups of personnel, the unit being supported should manifest passengers and perform anti-hijacking inspections.

7.7.4. Passengers will not carry weapons or ammunition on their person or in hand-carried baggage aboard an aircraft except special agents, guards of the Secret Service or State Department, and other individuals specifically authorized to carry weapons.

7.7.4.1. Troops or deadhead crewmembers will not retain custody of ammunition on an aircraft. They will turn it in to the troop commander or AC. Troops may carry unloaded weapons and ammunition aboard the aircraft during combat operations. When the tactical situation dictates, weapons may be loaded at the order of the troop commander or team leader, after coordination with the AC.

7.7.4.2. Dummy clips that can be easily identified may be loaded for training at the order of the team leader after coordination with the AC.

7.7.5. If weapons must be cleared, ask the individual to:

7.7.5.1. Move to a safe, clear area at least 50 feet from any aircraft, equipment, or personnel before unholstering or unslinging their weapons.

7.7.5.2. Clear weapons in accordance with standard safety procedures.

**7.8. Initial Response** . When an act of air piracy involves an Air Force installation or aircraft within the United States, response will be according to the following guidelines until such time as FAA assumes active direction of anti-hijacking efforts. Resist all attempts to hijack a military aircraft. Resistance may vary from simple dissuasion, through deception and subterfuge, to direct physical confrontation, including the prudent use of weapons.

7.8.1. The following guidelines should be used to counter a hijacking, actual or threatened, while the aircraft is on the ground:

7.8.1.1. Delay movement of the aircraft to provide time for ground personnel and the aircrew to establish communication and execute coordinated resistance actions.

7.8.1.2. The authority for determining when ground resistance will be discontinued is vested in the highest available level of command. When adequate communication cannot be established, or when time does not permit, this authority is delegated in the following order:

7.8.1.2.1. MAJCOM commander exercising operational control of the aircraft.

7.8.1.2.2. MAJCOM commanders in whose area of responsibility (AOR) the airfield lies.

7.8.1.2.3. Senior operational commander on scene.

7.8.1.2.4. AC.

7.8.2. A hijacked aircraft carrying weapons of mass destruction will not be allowed to takeoff. Refer to DoD 5210.41M, paragraph 9B(3), for additional guidance.

**7.9. Inflight Resistance** . After airborne, success in thwarting a hijacking depends on the resourcefulness of the aircrew. Many variables of a hijacking preclude use of any specific counter-hijacking procedure. Some key factors should be evaluated before deciding a course of action to be taken, including the nature of the threat, danger to life or crippling damage to the aircraft inflight, destination indicated by the hijacker, and the presence of sensitive material onboard. Some counter-hijacking actions the aircrew may consider are:

7.9.1. Engage the hijackers in conversation to calm him or her and to evaluate what course of action might be effective.

7.9.2. Dissuade the hijacker.

7.9.3. Use facts or subterfuge to convince the hijacker intermediate stops are necessary.

7.9.4. Propose more favorable alternatives, such as landing in a neutral, rather than a hostile, country.

7.9.5. Exploit any reasonable opportunity to incapacitate or overcome the hijacker physically, including the prudent use of firearms.

**7.10. Communications Between Aircrew and Ground Agencies** . Crews facing a hijacking threat will notify ground agencies by any means available as soon as practical and follow-up with situation reports as circumstances permit.

7.10.1. If possible, transmit an in-the-clear notification of hijacking to ATC. Controllers will assign IFF code 7500 (does not preclude subsequent selection of code 7700).

7.10.2. If in-the-clear transmissions are not possible, report "am being hijacked" by setting transponder to code 7500. If unable to change transponder code, or when not under radar control, transmit a radio message to include the phrase "(call sign) transponder seven five zero zero."

7.10.3. Controllers will acknowledge receipt and understanding of transponder code 7500 by transmitting "(call sign) (facility name) verify squawking 7500." An affirmative reply or lack of reply from the pilot indicates confirmation and proper authorities are notified.

7.10.4. To report "situation appears desperate; want armed intervention," after code 7500 is used, change to code 7700. If unable to change transponder code to 7700, or when not under radar control, transmit "(aircraft call sign) transponder seven seven zero zero."

7.10.4.1. When changing from code 7500 to code 7700, remain on 7500 for at least 3 minutes or until a confirmation of code 7500 is received from ATC, whichever is sooner, before changing to code 7700. ATC acknowledges code 7700 by transmitting "(call sign) (facility name) now reading you on transponder seven seven zero zero."

7.10.4.2. Aircraft squawking 7700 after squawking 7500, which are not in radio contact with ATC, are considered by ATC to have an inflight emergency (in addition to hijacking), and the appropriate emergency procedures are followed. Notification of authorities in this case includes information that the aircraft displayed the hijack code as well as the emergency code.

7.10.5. To report "situation still desperate, want armed intervention and aircraft immobilized", leave flaps full down after landing, or select landing flaps while on the ground. To facilitate message distribution, transmit "(aircraft call sign) flaps are full down."

7.10.6. To report "leave alone, do not intervene," retract the flaps after landing. Pilots who retract flaps after squawking 7700 should return to code 7500 and remain on code 7500 for the next leg of the hijacked flight unless the situation changes. Transmit "(call sign) back on seven five zero zero" to emphasize the fact intervention is no longer desired.

**7.11. Forced Penetration of Unfriendly Airspace .** These procedures are designed to deter possible hostile action against the hijacked aircraft that has been forced to penetrate airspace of a nation unfriendly to the United States.

7.11.1. If instructions from the unfriendly nation are received, either by radio contact or by air intercept before boundary crossing, comply with instructions received.

7.11.2. If no contact with unfriendly nation is made before approaching a boundary:

7.11.2.1. Maintain TAS not more than 400 knots.

7.11.2.2. Maintain an altitude between 10,000 and 25,000 feet if possible.

7.11.2.3. Fly a direct course toward destination announced by the hijacker, if no course is specified.

7.11.2.4. Transmit the international distress signal, MAYDAY, on any of the international distress frequencies (121.5 MHz, 243.0 MHz, or 2182 KHz) in an effort to establish communications.

7.11.2.5. Set mode 3 code 7700 on transponder.

7.11.2.6. If radio contact cannot be established, follow procedures set forth in FLIP.

7.11.3. Consider the presence of classified documents and equipment aboard the aircraft. When a landing in an unfriendly nation is imminent, attempt to dispose of or destroy the equipment or material.

**7.12. Arming of Crewmembers.** When crews are directed to carry weapons, at least one Flight Systems Officer (FSO) and one loadmaster will carry weapons. All crewmembers should know who is armed. The following procedures apply when arming is directed:

7.12.1. Issue. Before departing home station, obtain weapons, ammunition, lock and key. Crewmembers will be armed according to AFI 31-207, *Arming and Use of Force by Air Force Personnel* and MAJCOM publications. If an armed crew member must leave the crew enroute, transfer the weapon to another authorized crew member using AF Form 1297, **Temporary Issue Receipt**.

7.12.2. Wearing of Weapons. Wear weapons in a holster, concealed at all times to prevent identifying armed crewmembers. Do not wear weapons off the flight line except to and from the C2, armories, and other facilities associated with aircrew activities.

7.12.3. Weapons Storage Inflight. Crewmembers will be armed before beginning preflight, on-load or off-load duties and until completion of all post-flight duties. When no passengers are aboard, weapons may be stored in the gun box inflight after a satisfactory stowaway check. Crewmembers will rearm before landing. Weapons will normally remain loaded before placing them in a gun box.

7.12.4. Weapons Storage During Crew Rest.

7.12.4.1. Aircrews, including stage crews, will store weapons and ammunition in the most secure facility available, normally the base armory.

7.12.4.2. If an armory is unavailable, non-stage aircrews may store weapons and ammunition in the aircraft gun box. If the aircraft is not equipped with a gun box, and a weapons storage facility is unavailable, leave the weapons in the most secure and least visible location on the aircraft. Attempt to seal the weapons with a boxcar seal and maintain the seal number. Lock and seal the aircraft doors.

7.12.5. Storing weapons in the gun box:

7.12.5.1. Normally, weapons will remain loaded.

7.12.5.2. Advise the C2 agency as to which crew member has the gun box key.

7.12.6. Crewmembers will ensure they are reissued the same weapon until mission termination at home station.

7.12.7. Loading and Transfer of Weapons. Load and unload weapons at approved clearing barrels if available. Do not use a hand-to-hand transfer of loaded weapons to another crew member; place the weapon on a flat surface.

**7.13. Force Protection.** Crews must be alert to the possibility of terrorist activities at all times. The following considerations may help crewmembers avoid becoming victims of terrorism when operating in overseas locations:

7.13.1. Personal Conduct. Crews must realize their conduct can make them a target for individuals dissatisfied with US foreign involvement in their national affairs. Local foreign nationals may or may not condone a military presence - crew conduct will be watched and judged. Therefore, utilize the following:

7.13.1.1. Maintain good military bearing both on and off duty.

7.13.1.2. Avoid dressing in clothes that highlight the fact you are an American, i.e., cowboy hats, wide belt buckles, shirts with pro-American slogans, etc.

7.13.1.3. Do not wear clothing displaying profanity.

7.13.1.4. Know where "off-limits" areas are and avoid them.

- 7.13.1.5. Beware of personnel offering to take you on a “personal” sightseeing tour.
- 7.13.1.6. Do not get involved with anyone trying to involve you in games of chance.
- 7.13.1.7. When possible, always travel in groups of two or more.
- 7.13.1.8. Avoid demonstrations for any cause.
- 7.13.1.9. Avoid discussion of politics.
- 7.13.2. Ground Transportation Security. When traveling to and from billeting, messing facilities, etc. consider the following to minimize drawing attention to yourself as a potential target:
  - 7.13.2.1. Select a plain car; minimize the “rich American” look.
  - 7.13.2.2. If possible, consider not using a car that announces Government ownership.
  - 7.13.2.3. Keep the gas tank at least half full at all times.
  - 7.13.2.4. Do a thorough check of the car to look for signs of tampering - look at undercarriage and wheel-wells.
  - 7.13.2.5. Park in well-lighted areas, preferably under US control.
  - 7.13.2.6. Always lock your car. If possible, do not leave it on the street overnight.
  - 7.13.2.7. Only leave the ignition key with parking attendants.
  - 7.13.2.8. Before entering vehicles, check for suspicious objects. Look underneath vehicle seats.
  - 7.13.2.9. Guard against establishing a routine. Vary times, routes, and modes of travel. Avoid late night travel.
  - 7.13.2.10. Travel with companions or in convoys when possible.
  - 7.13.2.11. Avoid isolated roads and dark alleys.
  - 7.13.2.12. Ride with seat belts buckled, doors locked, and windows closed.
  - 7.13.2.13. Do not allow the vehicle to be boxed in. Maintain enough interval between you and the vehicle in front so that you can pass.
  - 7.13.2.14. Circle the block for confirmation of surveillance.
  - 7.13.2.15. Do not stop or take other actions which could lead to a confrontation.
  - 7.13.2.16. Recognize events that could signal the start of an attack, such as:
    - 7.13.2.16.1. Cyclist falling in front of your car
    - 7.13.2.16.2. Flagman or workman stopping your car.
    - 7.13.2.16.3. Fake police or government checkpoints.
    - 7.13.2.16.4. Disabled vehicle/accident victims on the road.
    - 7.13.2.16.5. Unusual detours
    - 7.13.2.16.6. An accident in which your car is struck.
    - 7.13.2.16.7. Cars or pedestrian traffic that box you in.
    - 7.13.2.16.8. Sudden activity or gunfire.

7.13.2.17. Know what to do if you are under attack:

7.13.2.17.1. Consider sounding the horn.

7.13.2.17.2. Put another vehicle between you or your pursuer.

7.13.2.17.3. Execute an immediate turn and escape, jump curbs at a 30-45 degree angle, 35 mph minimum.

7.13.2.17.4. Ram a blocking vehicle only as a last resort.

7.13.2.17.5. Go to the closest safe haven.

7.13.2.17.6. Report the incident to security police.

7.13.3. Personal Identification. Consider the following actions to avoid advertising the fact you are an American:

7.13.3.1. Don't discuss our military affiliation with strangers.

7.13.3.2. Avoid military style luggage such as B-4 bags & duffel bags with military logos, etc.

7.13.3.3. Consider placing your official passport and related documents such as military ID, flight orders, club card, dog tags, billeting receipts in your hand-carried luggage and not in your wallet or purse.

7.13.3.4. Wear conservative styled civilian clothing when using commercial transportation.

7.13.3.5. Remember, the key is to maintain a low profile.

7.13.4. Hotel Security. When billeted in commercial hotels, crews need to be aware of the following:

7.13.4.1. If possible, obtain rooms between the second and sixth floors. These rooms are high enough to be less vulnerable to unauthorized entry from the outside and low enough to simplify evacuation if necessary.

7.13.4.2. Always lock interior locks when occupying rooms.

7.13.4.3. Always assume your room is monitored and avoid viewing or discussing classified material.

7.13.4.4. Avoid establishing a predictable routine i.e., vary eating times and locations.

7.13.4.5. Avoid traveling on foot-use a vehicle (hotel shuttle, commercial taxi, etc.)

7.13.4.6. In high threat areas, stay off the streets (use hotel dining facilities if available)

**7.14. PHOENIX RAVEN Security Team (RST).** The RST supports mobility operations by providing security protection for aircraft transiting locations where a high threat, host, or en route security support may be marginal, unreliable, or nonexistent. A daily Threat Working Group (TWG) assesses security requirements for mobility missions and helps determine if a RST is required. When assigned PHOENIX RAVEN support, the AC will:

7.14.1. Verify MAJCOM travel status on each RST's travel orders. The RST reports directly to the AC, when assigned.

7.14.2. Add RST members to the aircrews flight orders (see paragraph 3.4.).

7.14.3. Be responsible for the RST's welfare (transportation, lodging, etc.).

7.14.4. Ensure the RST receives an aircraft mission briefing, aircraft egress/passenger briefing (as appropriate).

## Chapter 8

### OPERATIONAL REPORTS AND FORMS

**8.1. General.** This chapter contains a description of applicable reports and forms. For assistance in completing safety forms contact the wing, unit, or local flight safety officer.

**8.2. AF Form 457, USAF Hazard Report.** Reference AFI 91-202, *The US Air Force Mishap Prevention Program*. AF hazard reporting system provides a means for Air Force personnel to alert supervisors and commanders to hazardous conditions requiring prompt corrective action. A hazard is any condition, act, or circumstance that jeopardizes or may jeopardize the health and well being of personnel, or which may result in loss, damage, or destruction of any weapons system, equipment, facility, or material resource.

**8.3. AF Form 651, Hazardous Air Traffic Report (HATR).** See AFI 91-202, Atch 3, *Hazardous Air Traffic Report (HATR) Program RSC: HAF-SE (AR) 7602*.

8.3.1. The Air Force HATR program provides a means for personnel to report all near midair collisions (NMAC) and alleged hazardous air traffic conditions. Use information in HATR reports only for mishap prevention. AFI 91-202 lists reportable incidents.

8.3.2. Procedures:

8.3.2.1. Make an airborne report of the hazardous condition to the nearest ATC agency (e.g. center, FSS, control tower, or aeronautical radio station), and give the following information as appropriate:

8.3.2.1.1. Identification or call sign

8.3.2.1.2. Time and place (radial/DME of NAVAID, position relative to the airfield, incident, etc.

8.3.2.1.3. Altitude or flight level

8.3.2.1.4. Description of the other aircraft or vehicle

8.3.2.1.5. Include a verbal statement as soon as possible after occurrence that a written HATR report will be filed upon landing

**NOTE:** ATC agencies (e.g., FAA, etc) must know if an official report is being filed.

8.3.2.2. File the HATR as soon as possible (within 24 hours) using any available means of communication. Normally, it should be filed at the Air Force base operations office at the landing airport. If this is impractical and if communications permit, notify the safety office of the Air Force base where the condition occurred, the safety office at the home base, or as prescribed by the overseas MAJCOM. In any case, provide the base or wing safety office with all available information needed to prepare AF Form 651. Turn in a completed copy of AF Form 651 to the wing safety office.

8.3.3. Individuals submitting HATRs are granted immunity from disciplinary action provided:

8.3.3.1. Their violation was not deliberate.

8.3.3.2. They committed no criminal offense.

8.3.3.3. No mishap occurred

8.3.3.4. They properly reported the incident using procedures above.

**NOTE:** HATR reports are not privileged information and may be released outside the USAF.

#### **8.4. AF Form 711b, Aircraft Flight Mishap Report .**

8.4.1. Responsibilities. Notify the appropriate authorities of any mishap involving aircraft or crew. When notified, AFSOC units will initiate investigative and reporting actions in accordance with AFI 91-204, *Safety Investigations and Reporting*, and OPREP-3.

**NOTE:** Do not attempt to classify a mishap.

##### **8.4.2. Reportable Mishaps:**

8.4.2.1. Report damage to the aircraft, or injury to the crew or passengers; also report any damage or injury to another organization's equipment or personnel resulting from the movements or actions of an aircraft or crew.

##### **8.4.2.2. Report the following occurrences:**

8.4.2.2.1. A physiological episode is a physiological reaction, near accident, or hazard inflight due to medical or physiological reasons. This includes:

8.4.2.2.1.1. Proven or suspected cases of hypoxia.

8.4.2.2.1.2. Carbon monoxide poisoning or other toxic exposure.

8.4.2.2.1.3. Decompression sickness due to evolved gas (bends, chokes, neurocirculatory collapse), or severe reaction to trapped gas resulting in incapacitation.

8.4.2.2.1.4. Hyperventilation.

8.4.2.2.1.5. Spatial disorientation or distraction resulting in an unusual attitude.

8.4.2.2.1.6. Loss of consciousness from any cause.

8.4.2.2.1.7. Death by natural causes of any crewmember during flight.

8.4.2.2.1.8. Unintentional loss of pressurization if cabin altitude is above FL180, regardless of effects on personnel.

8.4.2.2.1.9. Alcohol and hangover (crew only).

8.4.2.2.1.10. Illness (both acute and pre-existing), including food poisoning, dehydration, myocardial infarction, seizure, and so forth.

8.4.2.2.1.11. Exposure to toxic, noxious, or irritating materials such as smoke, fumes, or liquids.

**NOTE:** In the event of a physiological episode, all crewmembers and passengers involved will report to a flight surgeon as soon as practical and request that an AF Form 711GA **Life Sciences Report of an Individual Involved in an AF Accident/Incident, Section A, Aircraft Accident/Incident**, be accomplished.

8.4.2.2.2. Inflight flameout, engine failure, required engine shutdown, or loss of thrust sufficient to preclude maintaining level flight above MEA.

**NOTE:** Intentional shutdowns for training and FCF are excluded; however, report failure to restart, using the criteria above.

8.4.2.2.3. Unselected propeller reversal.

8.4.2.2.4. Flight control malfunction resulting in an unexpected or hazardous change of flight attitude, altitude, or heading.

8.4.2.2.5. Malfunction of landing gear when difficulty is experienced using emergency system or procedures.

8.4.2.2.6. Inflight loss of all pitot-static instrument indications or all gyro stabilized attitude or directional indications.

8.4.2.2.7. Spillage or leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores or cargo.

8.4.2.2.8. All cases of departure from intended takeoff or landing surface onto adjacent surfaces.

8.4.2.2.9. Any incident which does not meet the established criteria for a reportable mishap but, in the judgment of the AC, needs to be emphasized in the interest of flight safety.

**8.5. Reports of Violations/Unusual Events or Circumstances.** Violations identified in AFI 11-202, Volume 3, *General Flight Rules*, alleged navigation errors (including over-water position errors exceeding 24 NMs, border and air traffic control violations) will be reported.

8.5.1. Use the following format and include.

8.5.1.1. Factual circumstances

8.5.1.2. Investigation and analysis

8.5.1.3. Findings and conclusions

8.5.1.4. Recommendations

8.5.1.5. Actions taken

8.5.1.6. Attachments to include.

8.5.1.6.1. Notification of incident

8.5.1.6.2. Crew orders

8.5.1.6.3. Statement of crew members (if applicable)

8.5.1.6.4. Documenting evidence (logs, charts, etc.)

8.5.2. In addition to the information listed, the historical flight plan will be downloaded onto a floppy disk and turned in to the command and control facility or owning standardization and evaluation office.

8.5.3. Send the original investigation report to the appropriate MAJCOM within 45 days.

8.5.4. The following OPREP-3 reporting procedures for all aircraft notified of navigational errors exceeding 24 NMs will be reported under AFMAN 10-206, Operational Reporting.

8.5.4.1. On notification of a navigational position error, the AC (or agency receiving notification) documents the circumstances surrounding the incident (report content below) and ensures submission of an OPREP-3 report through C2 channels.

8.5.4.2. Report content.

8.5.4.2.1. Name and location of unit submitting report

8.5.4.2.2. Mission identification number

8.5.4.2.3. Reference to related OPREPs-3

8.5.4.2.4. Type of event. (State "Navigation position error.")

8.5.4.2.5. Date, time (zulu), and location (i.e. ARTCC area)

8.5.4.2.6. Description of facts and circumstances. Include aircraft type and tail number, unit (wing or squadron assignment of crew), home base, route of flight, point of alleged deviation, and miles off course.

8.5.5. ACs must keep appropriate MAJCOM agencies apprised of any unusual events or circumstances impacting their missions. Examples of reportable events include meaconing, jamming, intrusion, interception, fuel dumping, loss of multiple engines, hostile fire, injury to passengers or crew members, etc. This list is not exhaustive. Some events may require the C2 agency to forward OPREP reports to higher headquarters. The old adage, "when in doubt, report it," applies.

**8.6. Petroleum, Oil, and Lubricants (POL) - Aviation Fuels Documentation.** Several different forms are used to record aviation fuels transactions. The form used to record the transaction depends on who and where the actual refueling takes place. Basically, these transactions can be broken down into two categories: refueling at USAF locations and refueling at other than USAF bases:

8.6.1. Refueling at USAF Locations. AF Form 1994, **Fuels Issue/Defuel Document**, is used to record the Aviation Fuels Transaction (issue or defuel) at USAF locations.

8.6.2. Refueling at locations other than USAF bases:

8.6.2.1. DD Form 1898, **AvFuels Into-Plane Sales Slip**. This form is used to record the aviation fuels transaction (issue or defuel) at other DOD locations (USA, USN, and USMC) and at commercial airports where into-plane contracts are in force.

8.6.2.2. AF Form 315, **United States Air Force Avfuels Invoice**. This form is used to purchase aviation fuels and oils at commercial locations where into-plane contracts are not in force. The form is filled in by the AC or his authorized representative and is described in AFI 23-206. If the vendor wants to be paid without submitting an invoice, the AC retains the original AF Form 315 to return to home station for accounting and finance processing. Provide two legible copies of the form to the vendor. If the vendor wants to submit an invoice for payment, give the vendor the original AF Form 315 to attach to the invoice.

**NOTE:** Aviation Into-Plane Reimbursement (AIR) Card. The Aircard is a commercial credit card which allows aircrews to purchase aviation fuel, fuel related supplies, and/or ground services at commercial airports where no DoD/Canadian into-plane contracts exist. Accepted at over 4200 locations, it is intended

to replace the AF Form 315 and AF Form 15 at locations that accept the Aircard. All Air Force aircraft will be issued an Aircard (program implementation date: 1 Oct 97). Additional information at SF WEB page: (<http://WWW.KELLY.AF.MIL/SFWEB/AIRCARD.HTM>).

**8.7. AF Form 15, United States Air Force Invoice.** Used to purchase ground fuels, oils, or services at non-DoD activities. See AFI 23-202. When completed, log and place inside AF Form 664, **Aircraft Fuels/Ground Servicing Documentation Log**.

8.7.1. Use the AF Form 15 for vendor services/supplies only if contract vendors are not available or the contract vendor will not accept the aircraft identaplate.

8.7.2. If the vendors require a signature on their form and an AF Form 15 has been used, write the statement "AF Form 15 Executed" on the vendor's form.

8.7.3. Return two copies of the AF Form 15 to the operations officer at home station.

8.7.4. Purchases at Canadian into-plane locations will be documented using the local vendor's invoice. AF Form 15 or 315 will not be accomplished. Hand scribe the information from the aircraft identiplat to the vendor's invoice, and complete a separate sheet with the information listed on the Aviation Issues to DoD and Non-DoD, Aircraft Refueling Tender Sheet. See AFI 23-202. Log and place a copy inside the AF Form 664.

8.7.5. Purchases at SITCO Agreement locations require presenting the aircraft identiplat. The invoice must include the date of transaction, grade of the product, quantity issued or defueled, unit of measure, and signature of the Air Force representative. If the vendor also requires completion of an AF Form 15 or 315 in addition to their invoice, annotate on the vendor's invoice "AF FORMS EXECUTED." Log and place the documentation inside the AF Form 664.

8.7.6. Purchases at non-contract commercial airfields are accomplished using the AF Form 15 or 315. Refer to AFI 23-202 for guidelines on completing these forms.

8.7.7. Purchases at foreign military airfields, including replacement-in-kind (RIK) locations, the host country forms are used to record the purchase. Information from the aircraft identiplat should be hand scribed on the local form. Log and place a copy inside the AF Form 664.

**8.8. AMC Form 54, Aircraft Commander's Report on Services/Facilities.** This is an instrument for ACs to report that services rendered or conditions encountered at AMC facilities were unsatisfactory or detrimental to efficient operation, or services rendered or procedures used are worth adopting for all organizations, or a performance rendered by a person (or persons) was commendable and deserves recognition. Attempt to solve problems at the lowest level or by contacting the senior MAJCOM representative. If further action is deemed necessary or the problem requires increased visibility, complete an AMC Form 54.

**8.9. AMC Form 43, Transient Aircrew Facilities Report.** Crewmembers may submit reports whenever they encounter unsatisfactory conditions or have suggestions for improvements of transient AMC facilities. This report may be submitted by any crewmember whether or not an unsatisfactory item is included in the AC's trip report. Complete AMC Form 43 and send to HQ AMC/MWPS, or MAJCOM equivalent.

## Chapter 9

### FLYING TRAINING POLICY

**9.1. General.** This chapter outlines procedures, requirements, and restrictions for training and mission flights. See AFI 11-202V1, *Aircrew Training*, and AFI 11-2EC-130J V1, *EC-130J Aircrew Training* and AFI 11-2EC-130J V2, *EC-130J Aircrew Evaluation Criteria*, for additional information.

#### **9.2. Crew Complement and Scheduling.**

9.2.1. Crew Qualification. Crewmembers must be current and qualified. If non-current or unqualified, the crew position must include an instructor or flight examiner.

9.2.2. Initial Training Flights. Fly initial training missions during daylight VMC unless unacceptable training delays result, or the instructor determines it suitable for the student's experience level.

9.2.3. Left seat training. With squadron commander approval, current and qualified copilots may fly in the left seat provided they are under direct IP supervision and no passengers are carried.

**9.3. Instructor or Flight Examiner Briefings.** Before all training and evaluation missions, instructors or flight examiners brief their crew on the mission profile, training requirements, and objectives or evaluation requirements.

**9.4. Debriefing.** After all training flights, instructors will:

9.4.1. Review and critique student performance.

9.4.2. Review training requirements fulfilled for each student and aircrew member (all aircrew members should understand thoroughly what training was accomplished).

9.4.3. Answer technical questions.

9.4.4. Preview the objectives of the next mission.

9.4.5. Complete training paperwork.

#### **9.5. Maximum Aircraft Weight for Training.**

9.5.1. Landing Weight for Training. Except for emergencies and no-flap landings, the maximum landing weight in the EC-130J should not exceed 140,000 pounds for "training" sorties. Landings accomplished above 130,000 pounds, will comply with guidance and restrictions found in the flight manual.

9.5.2. The maximum gross weight for no-flap landings is 128,000 pounds for EC-130J (CS) and 120,000 pounds for EC-130J (SJ) and C-130J.

9.5.3. Aircraft weight for tactics training. Do not perform practice tactics maneuvers or fly training / exercise missions at tactical altitudes with an aircraft weight of greater than 145,000 lbs. (not applicable to combat or contingency operations).

#### **9.6. Air Refueling Training Restrictions .**

9.6.1. During aerial refueling training missions, fuel will not be unloaded using the auxiliary hydraulic system.

9.6.2. See AFI 11-2EC-130J V1

**9.7. Special Maneuvers.** The following maneuvers or procedures are prohibited in the aircraft and may only be practiced in the flight simulator.

**EXCEPTION:** Reference AFI 11-2EC-130J Volume 1 for less restrictive maneuvers that may only be accomplished during pilot and copilot upgrades using the secondary method.

9.7.1. Full stalls.

9.7.2. Approach to stalls, except FCFs.

9.7.3. Rudder force reversals (fin stalls).

9.7.4. Simulated three-engine takeoffs.

9.7.5. Spins.

9.7.6. Simulated runaway trim malfunctions.

9.7.7. Simulated hydraulic system loss by turning engine-driven hydraulic pumps off.

## **9.8. Simulated Emergency Flight Operations.**

9.8.1. Conduct simulated emergency flight procedures IAW AFI 11-202V3 Chapter 5 and this instruction. Use a realistic approach and do not compound emergencies. Limit simulated emergencies to non-critical phases of flight when possible. Notify the controlling agency if a nonstandard traffic pattern or pattern requiring special sequencing is anticipated.

9.8.2. Practice emergencies which require simulating an engine shutdown, or placing switches in other than their normal positions or an abnormal configuration, only during training, evaluation, or currency flights when an instructor or flight examiner pilot is in one of the pilot seats. Preface all simulated emergencies with the word “simulated” and terminate simulated emergencies when an actual emergency arises.

9.8.3. Simulated EPs are prohibited with passengers on board.

**EXCEPTION:** EPs required for the purposes of a functional check flight are authorized. In this context, personnel on board are required for check flight accomplishment. Limit personnel to the absolute minimum required.

9.8.4. Do not combine no-flap circling approaches with any other simulated malfunction.

9.8.5. Do not conduct aircraft systems emergency procedures training during any tactical training.

9.8.6. Training EP and maneuver restrictions for specific flight maneuvers and missions are listed in **Figure 9.1**.

9.8.7. Copilots designated as AC candidates may perform any maneuver authorized for an AC (when in the left seat) while under the direct supervision of an IP (comply with para 3.1.1.1. of this AFI).

9.8.8. IP candidates under the supervision of a qualified IP, not in a pilot seat, may occupy a pilot seat with an unqualified pilot in the other seat except during takeoff, landing, and simulated engine-out training. This applies to all maneuvers in **Figure 9.1**, unless otherwise specified in the restrictions.

9.8.9. During initial and requalification IP evaluations, IP candidates may occupy a pilot's seat when under the supervision of a flight examiner not in a pilot's seat. Under these conditions, IP candidates may exercise all of the privileges of a fully qualified IP.

9.8.10. Request "option approach" prior to initiating an approach when a landing or low approach option is desired. (Example: "Request ILS option approach.")

## **9.9. Simulated Engine Failure Training.**

9.9.1. Direct IP supervision is required; except for IP candidates under the supervision of flight examiner during initial or requalification upgrade evaluations to IP. One throttle / power lever may be retarded to FLIGHT IDLE at not less than  $V_{mca}$  (one-engine inoperative, out of ground effect) nor less than 300 feet AGL.

**NOTE:** Two-engine and three-engine take-off procedures will only be accomplished in the flight simulator.

9.9.2. Instructors should consider the copilot's level of experience and proficiency when determining if they are ready for simulated engine out approaches, landings, and go around training.

9.9.3. Simulated Engine Failure Training Restrictions:

9.9.3.1. Engine out no-flap landings are restricted to copilots designated as AC upgrade candidates and pilots with each under the direct supervision of an IP.

9.9.3.2. Planned go-arounds are not authorized for three engine no-flap approaches.

9.9.3.3. Required go-arounds from engine out no-flap approaches require setting the flaps to 50% and using all four engines.

9.9.3.4. All go-arounds directed by an air traffic controlling agency will require termination of the simulated emergency and restoration of flaps and throttles to normal operating positions.

9.9.3.5. Practice three-engine takeoffs are prohibited.

9.9.3.6. Simulated two-engine approaches are prohibited.

**NOTE:** Two-engine and three-engine take-off procedures and approaches will only be accomplished in the flight simulator.

9.9.4. The following guidance will be adhered to during all engine(s) out training:

9.9.4.1. Instructor pilots should review T.O. 1C-130J-1-1, *Performance Data*, chapter 3 and appropriate T.O. 1EC-130J(CS)-1 chapter 3 information with their trainee(s) before flight. A complete understanding of minimum control speeds and the factors affecting those speeds are critical to performing simulated engine(s) out training successfully.

9.9.4.2. When conducting simulated engine(s) out training, post actual charted minimum control speeds on the TOLD card. For charted one-engine out minimum control speed above 109 knots, calculate a new minimum control speed by adding 8 knots during simulated one-engine out training. For a charted 2-engine out minimum control speed that falls between 117 and 128 KIAS, calculate a new minimum control speed by adding 8 knots during simulated 2-engine out training. During simulated 3-engine takeoff operations, takeoff speed will be adjusted for minimum control speed. If the charted minimum control speed is above 109 KIAS, add the 8 knot correction factor.

The instructor pilot should strive to maintain near, but not less than, zero torque on the simulated shutdown engine(s).

9.9.4.3. Normally turns should be planned to be in the direction of the good engines.

9.9.4.4. Turns into simulated failed engines should be minimized. Turns into simulated failed engines are permissible but require a higher degree of pilot skill than with actual failed engines and must be smooth and coordinated.

**WARNING:** Improper application of rudder or power can lead to an immediate out-of-control situation where recovery might not be possible.

9.9.4.5. Practice three engine missed approaches will comply with the missed approach procedure described in section III of T.O. 1EC-130J(CS)-1. IPs should exercise extreme caution when performing simulated engine out training.

## 9.10. Touch-and-Go and Stop-and-Go Landings:

9.10.1. Touch-and-Go Landings. Authorized only on designated training, evaluation, or currency missions. Only flight idle touch and go landings will be accomplished.

9.10.1.1. Touch-and-go landings may be performed by:

9.10.1.1.1. Instructor pilots, instructor pilot candidates on initial or requalification instructor evaluations, or flight examiner pilots in either pilot seat.

9.10.1.1.2. Any pilot from either seat providing an instructor pilot, instructor pilot candidate on initial or requalification instructor evaluation, or flight examiner pilot is in the other seat.

9.10.1.1.3. Any current and qualified pilot may conduct flight idle touch-and-goes when the aircraft commander is "touch-and-go" designated on the flight orders. Further, the aircraft commander must be touch-and-go certified, and have at least 100 hours in command as a C-130 aircraft commander. Aircraft commander qualified pilots (MP, FP) may fly from either seat, but copilot qualified pilots (MC, FC) must fly from the right seat.

9.10.1.2. Touch-and-go landings are authorized when crosswind component corrected for RCR is within the recommended zone of the landing crosswind chart. Ceiling and visibility (RVR) must be at least 300 feet and  $\frac{3}{4}$  mile (40).

9.10.1.3. Touch-and-go procedures will be part of the crew briefing.

9.10.1.4. Touch-and-go landings are not authorized when normal wake turbulence criteria are not met or, when intercepting or crossing the flight path of a jumbo jet while performing an approach or landing.

9.10.1.5. The minimum runway for touch-and-go landings is 6,000 feet.

9.10.2. Stop-and-Go Landings. Authorized only on designated training, evaluation, or currency missions. Stop-and-go landings will not be accomplished in the EC-130J (CS) or mission configured EC-130J (SJ) aircraft. Authorized for any EC-130J qualified pilot provided the following conditions are met:

9.10.2.1. Stop-and-go landings can be accomplished in non-mission configured EC-130J (SJ) aircraft in conjunction with a formal training syllabus. If stop-and-go landings are accomplished in the EC-130J (SJ) or BAI C-130J, maximum power will be used for the takeoff.

9.10.2.2. Crosswind component corrected for RCR must be within the recommended zone of the landing crosswind chart. Ceiling and visibility (RVR) must be at least 300 feet and  $\frac{3}{4}$  mile (40).

9.10.2.3. Use minimum braking to stop.

9.10.2.4. Runway remaining for takeoff must be sufficient to allow takeoff and refusal speeds to be equal.

9.10.2.5. Stop-and-go landings are not authorized in conjunction with no-flap landings or when normal wake turbulence criteria are not met, or when intercepting or crossing the flight path of a jumbo jet while performing an approach or landing.

**9.11. Simulated Instrument Flight.** Do not use a hood or other artificial vision- restricting device for any phase of flight. Simulated instrument flight may be flown and logged without use of a vision-restricting device.

**9.12. Tactics Training Flight Restrictions:**

9.12.1. All required tactics ground training must be completed prior to participating in a tactical training flight as an aircrew member.

9.12.2. Tactics training will be conducted on training areas and routes and use mission materials approved by the unit tactics shop.

9.12.3. Climb to ESA when either pilot must leave the seat during a training mission at tactical altitudes.

9.12.4. Practice defensive maneuvers are visual maneuvers, and must be cleared by the pilot prior to initiation. During training, threat locations will be briefed for a specific leg or legs. Do not brief the entire route as a threat. This allows crewmembers to move about the aircraft without fear of injury from maneuvering. If weather or another event prevents flying in the briefed location, the location may be adjusted in flight. During training, emphasis on defensive maneuvering should be placed on early identification and avoidance of threats.

9.12.5. When any crew member observes an aircraft malfunction, incapacitated aircrew member, or any other situation they believe is unsafe, and calls "knock-it-off" or "time-out," the pilot in control of the aircraft will terminate all training activity and initiate an immediate climb to the ESA.

9.12.6. For initial qualification, tactics training flights will be conducted in day VMC only. Currency training can be conducted in night VMC.

9.12.7. Tactics training profiles and / or flight procedures will be flown only on scheduled tactics training flights by mission qualified crews or crewmembers formally entered in the mission qualification training program and under the direct supervision of a qualified instructor.

9.12.8. (Day VMC only) For tactics training flights, mission qualified pilots will maintain a minimum of 1,000 ft AGL or as limited by airspace requirements, whichever is more restrictive, when not under the direct supervision of an IP .

9.12.9. Instructors: IPs and pilots under the direct supervision of an IP may fly Day VMC tactics training flights at 500 ft AGL or as limited by airspace requirements, whichever is more restrictive.

9.12.10. Aircrews participating in a formal tactics school (example: AATTC, St Joe) with a qualified course instructor onboard are authorized 300 ft AGL (500 ft AGL for Commando Solo) or as limited by course or airspace requirements, whichever is more restrictive. 300 ft AGL only applies during their participation in the course.

9.12.11. During all training and exercise missions, defensive maneuvers will never be accomplished using asymmetric thrust. To defeat a real threat in an actual combat situation, use extreme caution when performing defensive maneuvers if asymmetric thrust results from the loss of power in an engine. Under normal combat conditions do not use asymmetric thrust.

9.12.12. Pilots and copilots will use a maximum of 45 degrees of bank angle for practice tactical emergency descent procedures and turns of more than 180 degrees during practice random steep approaches. Pilots and copilots may use the maximum bank angle of 60 degrees for these procedures while under the direct supervision of an IP. All pilots may accomplish all other threat maneuvers using up to 60 degrees of bank or as restricted by the flight manual, whichever is more restrictive.

9.12.13. Terminate practice emergency tactical descent procedures a minimum of 3,000 ft AGL for all EC-130J aircraft weighing more than 110,000 lbs.: and 2,000 ft AGL for EC-130J aircraft weighing less than 110,000 lbs.

**Figure 9.1. Training Maneuver Restrictions.**

MANEUVER	RESTRICTION(S)
Aborted Normal Takeoff	Authorized during daylight. Crosswind component must be within the recommended zone of the takeoff cross wind chart. Runway must be dry, hard-surfaced, and long enough to allow refusal and takeoff speeds to be equal. Initiate the abort by stating, "REJECT" before refusal speed. Do not practice aborts from touch-and-go or stop-and-go landings. If actual engine shutdown due to a simulated malfunction is to be practiced, it must be prebriefed.
Actual Engine Shutdown and Air-start	One engine may be shut down at not lower than 2,500 feet AGL in daylight VMC. Aircraft must have two-engine out operating capability.
No-Flap Landing (see note 1)	Authorized in conjunction with a simulated engine(s)-out landing. Maximum gross weight is 128,000 pounds for EC-130J (CS) and 120,000 pounds for EC-130J (SJ) and C-130J. The crosswind component must be within the recommended zone of the landing crosswind chart.. Authorized in night VMC and day IMC if weather is at or above circling minimums. If the no-flap landing is performed in conjunction with a simulated engine(s)-out, use the appropriate WX minimums for the simulated EP.

MANEUVER	RESTRICTION(S)
Go-Around; Missed Approach	Minimum altitude is 500 feet AGL when aircraft, equipment, or personnel are on the runway. Initiate VFR go-around no lower than 100 feet AGL when practicing simulated emergencies other than simulated engine failures. Initiate practice instrument missed approaches no lower than the minimum altitude for the approach. (Instructor not required.)
Simulated Engine-Out Go-Around; Missed Approach (see note 1)	Initiate simulated engine-out go-around at not lower than 200 feet AGL. Initiate simulated engine-out missed approach no lower than the minimum altitude for the approach.
Simulated Engine Failure Engine-Out Landing (see note 1)	One throttle may be retarded to FLIGHT IDLE at not less than air minimum control speed (one-engine inoperative, out of ground effect) nor less than 300 feet AGL. Authorized at night if weather is at or above 1,000/2 or circling minimums, whichever is higher. Authorized in daylight IMC if the weather is at or above circling minimums. Use all 4 engines for touch-and-go takeoff.
Simulated 2-Engine Out Landing (see note 2)	Simulate failure of the second engine at not less than 1,000 feet AGL and not more than 125,000 EC-130J (CS) / 120,000 EC-130J (SJ) pounds gross weight. Authorized in daylight VMC on a dry, hard surface runway at least 147 feet wide with a crosswind component within the recommended zone of the landing crosswind chart. Use all 4 engines for the touch-and-go takeoff, go-around or missed approach.
Simulated 2-Engine Go-Around; Missed Approach (see note 2)	Authorized in daylight VMC above 5,000 feet AGL. Airspeed at initiation of go-around will not be lower than 2-engine air minimum control speed.
Unusual Attitudes and Spatial Disorientation	Authorized at not lower than 10,000 feet AGL in daylight VMC.
Slow Flight	Fly at approach, threshold, and 1.2 times stall speed with gear down and flaps 0, 50, or 100%. Do not exceed 15 degrees of bank.

**NOTES:**

1. Consider the copilot's level of experience and proficiency when determining if they are ready for this training.
2. Simulated two-engine out landings and go-around will only be accomplished in the flight simulator.

## **Chapter 10**

### **LOCAL OPERATING PROCEDURES**

#### **10.1. General.**

10.1.1. EC-130J flying units will develop a supplement to this chapter for local operating procedures, as applicable to this instruction.

10.1.2. The supplement should not duplicate and will not be less restrictive than the provisions of this or any other publication without prior authorization from the appropriate MAJCOM.

10.1.3. The supplement will be distributed to the MAJCOM, as applicable.

## Chapter 11

### FLIGHT SYSTEM OFFICER PROCEDURES

#### *Section 11A—General Procedures*

##### **11.1. General Flight Systems Officer (FSO) Procedures.**

11.1.1. All EC-130J Commando Solo and Super J Flight Systems Officers (FSO) will use procedures and forms prescribed by this instruction. Any reference to the EC-130J aircraft in this chapter is applicable to Commando Solo (CS), Super J (SJ), and Super J Supported Missions (SM) operations unless otherwise specified.

11.1.2. Forms. This chapter contains instructions for completion of AF Form 4138, **EC-130 Flight Plan and Navigation Log**; AF Form 4139, **Special Operations C-130 Inflight Refueling Worksheet**; and AF Form 70, **Pilot's Flight Plan and Flight Log**. Computer flight plan (CFP) forms may be used in lieu of the AF Form 70 or the flight plan portion of the AF Form 4138; using formats approved by the unit Stan/Eval.

11.1.2.1. AF Form 4138, **EC-130 Flight Plan and Navigation Log** includes sections for flight, fuel and ETP planning, and areas for inflight navigation, fuel management and calibration documentation. The inflight navigation, fuel management and calibration sections will be completed in sufficient detail to fully evaluate or reconstruct the flight. The inflight navigation log uses the single line entry format where actual and proposed data use the same format on separate line entries. Information associated with inflight fuel management, and calibration checks are included on this form, and will discussed in other sections of this instruction.

11.1.2.2. Signature Block(s). After completing all flight plan, fuel analysis, and ETP data, or verifying CFP derived information, sign all applicable forms (AF Form 4138 or AF Form 4139).

11.1.2.3. Following mission completion, FSOs will turn in all charts, CFPs, fuel planning calculations, and forms required for inflight navigation and fuel management on category 1 routes to the unit's FSO section supervisor to retain for 90 days.

11.1.3. Clearances. Record ATC clearances and monitor the read back. This includes all ATC instructions during departure, en route, and approach.

**EXCEPTION:** Not required when ATC instructions require immediate execution by the pilot, or when such action would interfere with the timely performance of aircrew duties.

##### **11.1.4. Procedures:**

11.1.4.1. Monitor the primary command radio unless otherwise directed by the aircraft commander.

11.1.4.2. Departure and Approach Monitoring. Immediately after takeoff, crosscheck available flight instruments with the airborne radar to ensure the aircraft remains clear of obstructions. During departure and arrival in Instrument Meteorological Conditions (IMC) with airborne radar inoperative, use all available navigation aids to accurately position the aircraft. On all departures and arrivals, have the appropriate approach plate open to monitor course, timing, and altitude. Backup the pilots and assist as necessary. Report any deviations immediately. Assist in clearing

for other aircraft when possible. Confine activities to these critical duties during all departures and arrivals.

### ***Section 11B— Flight Planning Procedures***

#### **11.2. General Flight Planning.**

11.2.1. Regardless of whether a flight plan is prepared by the aircrew or is furnished by another agency, the aircraft commander and FSO will verify routes and altitudes provide proper terrain clearance and meet FLIP and Foreign Clearance Guide (FCG) requirements. On overseas flights, verify the flight planned routing against the diplomatic clearance, if applicable.

11.2.2. The FSO preparing or accepting the flight plan will remain on duty at the FSO's station during departure. During a crewmember change, the FSO on duty will thoroughly brief the relieving FSO.

11.2.3. Category I Routes. Flight planning using the AF Form 4138, or an approved computer flight plan (CFP) generated facsimile will be used to plan all EC-130J flights that include Category 1 route segments of 3 hours or more.

11.2.4. Category II Routes. Use the AF Form 70, AF Form 4138, or a CFP. Compute required fuel using the AF Form 4138, AF Form 4139, or approved CFP fuel analysis procedures, as applicable (not required for local area flights).

11.2.5. Ensure all required fuel computations are accurate and complete, and confirm the ramp fuel load is compatible with mission requirements in accordance with procedures outlined in [Chapter 12](#), using the AF Form 4138, AF Form 4139, or approved CFP fuel analysis procedures, as applicable.

11.2.6. Provide a copy of the flight plan to the pilot, copilot, MSO / AMS, and any crewmember requesting it.

11.2.7. Separate flight plan line entries are desirable for mission orbit and air refueling anchor delays. Multiple delay entries with a step climb profile may be desired for extended delays to accurately determine fuel requirements.

11.2.8. All routes will be planned to a terminal NAVAID / fix within 25 NM of or overhead the destination airfield at the final enroute cruise altitude.

11.2.9. Normally, the destination divert or inflight refueling abort profile is based on direct routing at 260 KTAS at 10,000 feet for alternates within 200 NM of the destination airfield / EAR point, and FL210 or FL220 at Long Range Cruise (LRC) speed for alternates beyond 200 NM.

11.2.10. The unit Stan/Eval will publish Standardized Drag Index and planning factors to be used for flight performance and fuel planning.

#### **11.3. Computer Flight Planning.**

11.3.1. Computer flight-planning systems including: Special Operations Forces Mission Planning (SOFMP), Combat Flight Planning Software (CFPS), Portable Flight Planning Software (PFPS), and Falcon View are the preferred method for EC-130J flight planning.

11.3.2. As with any computer-generated mission-planning product, the FSO is always responsible for the accuracy of data used inflight. Computer flight plans will be verified for correctness prior to each flight.

11.3.3. If the flight-planning computer transfers the flight plan to the aircraft electronically, it must be an AFSOC approved system (OPR: HQ AFSOC/DOXF).

11.3.4. The flight planning computer configuration and forms must be approved by the unit Stan/Eval.

11.3.5. Crosscheck the CFP route of flight against the route of flight entered on the DD Form 175, DD Form 1801, or International Civil Aviation Organization (ICAO) flight plan.

11.3.6. When an inflight refueling is included in the route of flight, insert a divert (DVT) in the End / Exit Air Refueling (EAR) line to determine A/R alternate fuel requirements. See [Figure 12.4](#).

11.3.7. AMC CFPs are not normally adequate for EC-130J flight operations. When AMC CFPs are used, EC-130J fuel planning will be accomplished manually using standard AF Form 4138 or AF Form 4139 procedures and documents as outlined in [Chapter 12](#) of this instruction.

**11.4. AF Form 4138 Manual Flight Planning.** The procedures listed below are designed to accommodate a wide range of different EC-130 mission profiles. All entries and items in the flight plan portion are self-explanatory except as noted below. See [Figure 11.2.](#), [Figure 12.2.](#) and [Figure 12.5](#).

11.4.1. Use average information for planning each leg of the route, as deemed appropriate.

11.4.2. Special line entries.

11.4.2.1. Initial and Enroute Climb Level Off entries. A separate flight plan line entry is required for initial and each enroute climb of greater than 5,000 feet when manual fuel planning is accomplished. Compute the zonetime for climb lines by using average climb TAS derived from T.O. 1C-130J-1-1 time and distance to climb charts. Separate climb lines is not required for any climb of 5,000 feet or less; compute the cruise leg zonetime at en route TAS plus 1 minute for each 4000 feet of climb.

11.4.2.2. ONLOAD entries. For each inflight refueling include a separate onload line entry after the EAR line. The onload line should include the word onload, the planned fuel onload and other information as described in [Chapter 12](#).

11.4.2.3. DELAY entries. For each mission orbit delay include a separate flight plan line entry. The delay line should include as a minimum the word delay and time.

11.4.3. TO. List route and proper names of intersections, waypoints, or geographic coordinates if no name is assigned. Also include FIR boundaries, and air refueling points. Include a separate flight plan line for each of the following (use an additional AF Form 4138 if required).

11.4.4. RETA. Revised ETA. Use this column inflight when route diversions or unexpected speed changes cause significant ETA changes (greater than 3 minutes).

11.4.5. ALTERNATE and A/R abort. Use AFI 11-202 VOLUME 1 and AFI 11-2EC-130J, Volume 3, **Chapter 6** to determine the requirement for a destination alternate airfield. Enter the proper name or the ICAO identifier of the alternate airfield, if required. Enter the IFR abort airfield(s) for missions including an inflight refueling.

11.4.6. DISTANCE. The straight-line distance or total flight planned zone distance from destination to alternate airfield. For inflight refueling, use the straight-line distance or total flight planned zone distance from EAR to abort airfield.

11.4.7. TIME. Compute using ground speed, based on the planned cruise true airspeed and best-known wind.

11.4.8. Normally calculate inflight refueling divert information using a direct route from the EAR point to overhead the abort airfield.

### ***Section 11C— Equal Time Point Procedures***

**11.5. ETP Computations.** Wind Factor and ETP Data Computations are required on Category I routes or Category I route segments when the total time between the last suitable airfield (LSAF) and the first suitable airfield (FSAF) is 5 hours or more. Suitable airfields are those normally within 100 NM of flight planned course centerline meeting weather, fuel, and EC-130J runway requirements. Inflight refueling missions may require a separate ETP computation for each fuel analysis route segment, and the ETP(s) should be considered when planning the location of IFR tracks. Plan to have sufficient fuel at each EAR point to divert to a planned A/R abort base, in the event an inflight refueling is not completed. Use a point abeam the AR abort base as the LSAF or FSAF for wind factor computations, and ETP data. ETP computations are not normally required for round robin or search missions.

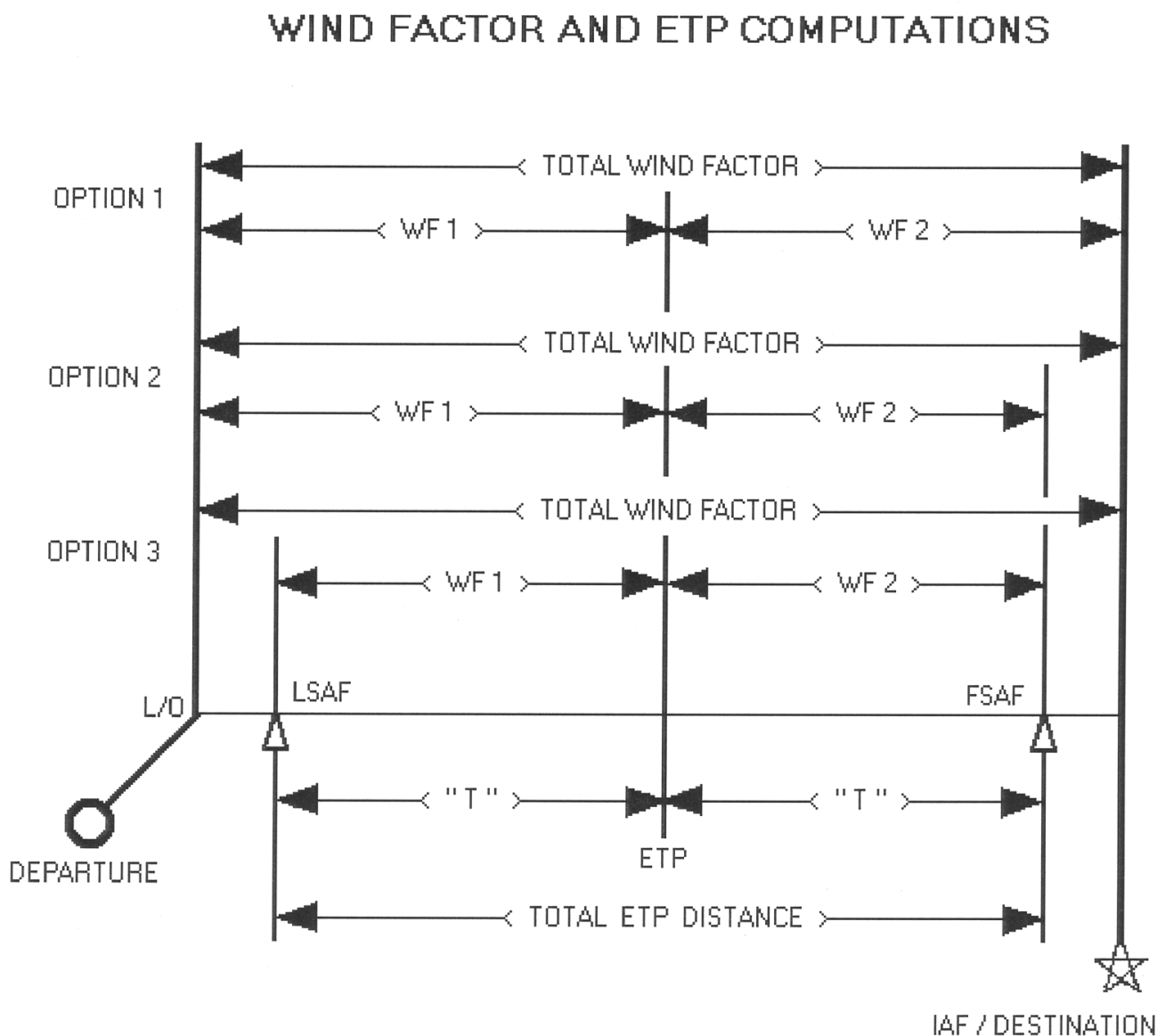
**NOTE:** Wind factor and ETP computations are not normally required for round robin or search missions.

**NOTE:** Suitable runways for EC-130Js are 5000 feet long, 60 feet wide, and must have the single-tandem weight-bearing capacity for the planned gross weight. Consult the pilot if considering an airfield less than 5000 feet long or 60 feet wide.

11.5.1. Wind Factor Data. First and second half wind factors are computed between last and first suitable using the approximate midpoint as a division. Flight planned values for distance, time, and average flight planned TAS will be used to calculate wind factors. If either first or last suitable airfields are more than 50 NM from the planned route, an alternate wind factor computation may be required.

**NOTE:** For wind factor computation convenience, LSAF means level off, abeam or over LSAF, or closest planned checkpoint or radio aid within 100 NM of LSAF. FSAF means abeam or over FSAF, closest planned checkpoint or radio aid within 100 NM of FSAF, descent point, or destination. Any option in the ETP options [Table 11.1](#) may be used, but normally wind factor Option 3 is the preferred ETP computation method. Calculate the first and second half wind factors for the EC-130 using Option 2 only when level off occurs after the LSAF. Specify the option used and record data in the ETP computation Section of the AF Form 4138.

Table 11.1. ETP Options.



11.5.1.1. Total Wind Factor. Compute the average ground speed (GS) between LSAF/Level Off and FSAF/Destination. For the EC-130 Commando Solo, option 1 is the preferred method for calculating the total wind factor, using the level off or a point near level off and the Destination / or IAF. Divide the total distance between the two points by the total time between the two points:

Total Distance

Total Time = Average GS

Subtract the average flight planned true airspeed (TAS) from the average GS to obtain the total wind factor.

WF = Average GS - Average TAS

11.5.1.2. 1<sup>st</sup> Half. Compute the average GS between LSAF and approximate midpoint between LSAF and the FSAF. Subtract flight-planned average TAS from the computed average GS to obtain the 1<sup>st</sup> half wind factor.

11.5.1.3. 2<sup>nd</sup> Half. Compute the average GS between the approximate midpoint and the FSAF. Subtract flight-planned average TAS from the computed average GS to obtain the 2<sup>nd</sup> half wind factor.

11.5.2. ETP Data. Emergency and inflight fuel management decisions will be made relative to the ETP(s). Use the following instructions to compute ETP data:

11.5.2.1. DISTANCE (LSAF TO FSAF). Enter the total distance (regardless of level off) from or abeam the LSAF along course from departure to or abeam the FSAF along course toward destination. The distance for ETP computations will be computed between the LSAF and FSAF, preferably within 50 NM of the planned track. For missions with a single or multiple inflight refuelings, LSAF(s) and FSAF(s) may routinely exceed the 50 NM criteria and require multiple ETP computations incorporating air refueling abort bases.

11.5.2.2. The wind factors will be used in conjunction with the best range TAS for GSR and GSC to determine the ETP ( ) NM distance and ETP TIME.

11.5.2.3. The following ETP formulas should be used:

$$\frac{\text{DIST (2000)}}{\text{GSR (270) + GSC (320)}} = \frac{\text{ETP (915) NM}}{\text{GSR (270)}}$$

$$\frac{\text{ETP (915) NM}}{\text{GSR (270)}} = \text{ETP Time (T) (3+23)}$$

Values for Example:

WF1 = First half wind factor (+20)

WF2 = Second half wind factor(+30)

DIST= Distance between last and first  
suitable airport (2000 NM)

GSR = Ground speed to return  
(TAS-WF1)

GSC = Ground speed to continue  
(TAS+WF2)

Best Range TAS = 290

11.5.2.4. The ETP ( ) NM distance is from the last suitable airport to the ETP and will be plotted and labeled on the FSO's chart.

11.5.2.5. The ETP Time ("T") is the calculated enroute time from the ETP to the FSAF, and equal to the time from the ETP back to the LSAF. This time will be used for fuel calculations, when information references ETP Time (T).

11.5.3. Inflight ETP procedures. Recompute the ETP when the actual arrival over any reporting point prior to the ETP exceeds 15 minutes ahead or behind the flight planned ETA when the change is caused by erroneous wind information. If the change is caused by factors other than a change in the wind (i.e., slow TAS, deviations for weather, air traffic control vectors or route changes), simply compute a new ETA to the ETP as the ETP itself will not have changed. Inflight fuel management decisions will be made relative to the ETP(s).

## ***Section 11D— Charts***

### **11.6. Flight Chart Requirements.**

11.6.1. On flights along airways or Category II routes, use applicable charts suitable for radar flight following (JNCA scale or larger). Use a terrain chart (ONC scale or larger) depicting all terrain in the terminal area (within 25NM of the airfield).

11.6.2. Maintain a plotting chart showing flight progress on all Category I and oceanic routes. The following information will be shown on the chart:

11.6.2.1. FSO's name and coordinated universal date in the vicinity of departure or coast out point.

11.6.2.2. Chart number, and chart edition will be annotated on the front or back of all charts.

11.6.2.3. CHUM. For low-level flight charts (1:500,000, 1:250,000, and 1:50,000), annotate current CHUM near the chart number and edition. Check the CHUM on all charts (GNC, JNC, etc.). CHUM information is not required on high-level navigation charts.

11.6.2.4. The flight plan reporting points, centerline course, and portions of ADIZ and FIR boundaries pertinent to the route. Label reporting points with proper names or geographical coordinates.

11.6.2.5. Place the applicable portion of the "No Fly" line on all charts used for missions flown in the vicinity of unfriendly territory. Prominently mark warning and restricted areas within 25 NM of planned course and 3000 feet of planned altitude on the chart (not required if a FLIP en route chart with this information is immediately available and used).

11.6.2.6. Annotate airfields along the planned route, which could serve as possible inflight refueling abort and emergency landing areas. Consider the following factors when selecting emergency airfields: type aircraft, weather conditions, runway length, runway weight-bearing capacity, runway lighting, radio navigational aids, and proximity to planned flight path.

11.6.3. Plot fixes and clearly label with time of each fix or position.

11.6.4. Multiple legs on the same chart are permissible (e.g. Hickam, Wake Island, Guam) when practical.

11.6.5. Chart Usage. In the interest of conservation, reuse flight charts for high-level missions whenever this would not affect plotting accuracy of fixes or position determination.

### ***Section 11E—Inflight Navigation Procedures***

#### **11.7. Enroute Flight Progress Procedures:**

11.7.1. General. When using the EGI, INS or GPS as the primary means of navigation, use all available NAVAIDs to monitor and crosscheck navigation systems performance and ensure compliance with course and ETA tolerance. On airways, the pilot flying the aircraft may couple the selected navigation system to the autopilot provided the applicable airway NAVAIDs are selected and monitored by the FSO or pilot not flying the aircraft.

11.7.2. Immediately report malfunctions or loss of navigation capability which degrades centerline accuracy to the air traffic controlling facility.

11.7.3. When flying designated Category II route segments, no entries are required on the inflight navigation log. ETA/ATA blocks on the flight plan portion satisfy log requirements.

11.7.4. Category I Routes. Use the following procedures to monitor flight progress on category I routes. See [Figure 11.3.](#) and [Figure 11.4.](#)

##### 11.7.4.1. Fix requirements.

11.7.4.1.1. Fixes and documented log entries are required when flying Category I route segments of 3 hours or more.

11.7.4.1.2. All fixes will include full line navigation log entries using instantaneous information recorded at fix time.

11.7.4.1.3. Document and plot a coast-out fix prior to or upon entering a category I route and crosscheck all aircraft navigation systems and solutions against available NAVAIDs.

11.7.4.1.4. Normal fix interval: The time interval between recorded fix positions (full-line fix entries on the AF Form 4138) will not exceed 1+20. Under normal conditions, 1 hour or less is the recommended time between recorded positions.

11.7.4.1.5. Search and Rescue procedures. While on search missions the time interval will not exceed 40 minutes. During the search portion, fixes will be portrayed on the chart and substantiated in the AF Form 4138 NAV DATA block, but full line entries are not required.

11.7.4.1.6. For each recorded fix, cross-check both EGI systems performance and all navigation solutions

##### 11.7.4.2. Transiting each flight planned waypoint.

11.7.4.2.1. Cross check the actual outbound aircraft heading against the flight plan.

11.7.4.2.2. Record the Actual Time of Arrival (ATA) on the flight plan and update the flight plan ETA to the next waypoint.

11.7.4.2.3. Inflight navigation log A/H documentation is not required at planned Category I route turn points when a functional navigation system is providing reliable course guidance, which utilizes an integrated navigation solution that includes GPS / INS inputs.

11.7.4.3. Revised routing procedures. In addition to the normal enroute procedures, accomplish the following flight progress procedures while on a revised Category I route, which is not part of the original flight planned route. See [Figure 11.3](#).

11.7.4.3.1. Plot the revised route on the chart.

11.7.4.3.2. While on a revised route segment, calculate an A/H line on the AF Form 4138 at each turn point and cross check the actual outbound aircraft heading against the calculated heading.

11.7.4.4. Degraded systems operations. See [Figure 11.4](#).

11.7.4.4.1. Dead reckoning positions will precede full line fix entries when a reliable INS / GPS navigation solutions are not available. Substantiate all required dead reckoning positions using average entries rather than spot.

11.7.4.4.2. With inoperative or degraded EGIs / INSs, use the GPS (or Backup PGU) to cross check the remaining navigation solutions to determine the accuracy of the navigation system.

11.7.4.4.3. When unable to obtain course guidance from a reliable EGI, INS, or GPS navigation solution, an alter heading (A/H) will be calculated and documented on the AF Form 4138 navigation log for each flight planned turn point.

## 11.8. Calibration Procedures.

### 11.8.1. Heading Checks.

11.8.1.1. Crosscheck all aircraft heading systems to validate navigation system headings. If the heading systems (including the standby compass) differ by more than 2 degrees, write the system up in the aircraft maintenance forms.

11.8.1.2. Heading deviation is not necessarily constant over time or after significant course changes.

11.8.1.3. Heading deviation checks are not required on Category II routes.

11.8.1.4. On Category I routes or route segments, compute heading deviation for each heading system as soon as practical after initial level off or coast out. Recompute heading deviation on Category I routes or route segments every 3 hours or after course changes of more than 30 degrees since the last deviation check.

**EXCEPTION:** A deviation check is not required on flights transiting Category I routes of less than 3 hours if the aircraft is equipped with two or more operable heading systems (the standby compass is not considered a system for this requirement) and the difference between systems does not exceed 2 degrees.

11.8.1.5. When a heading deviation check is required, record INS 1, INS 2, and standby compass heading data as a separate deviation check entry or as part of a full line fix entry on the AF Form 4138 inflight navigation log as follows:

11.8.1.5.1. Record both INS 1 and INS 2 heading information in the Magnetic Heading (MH) block. Normally system 1 information is recorded in the top portion of the block while system 2 information is entered in the bottom half of the data block.

11.8.1.5.2. Record the standby compass heading in the Compass Heading (CH) block.

11.8.1.5.3. Enter the mathematically derived Compass Deviation in the DEV block.

11.8.1.5.4. Document heading deviation checks, which are not part of a full line log entry, as follows. Enter the time the heading check is accomplished in the GMT block. Write "Compass Check" in the NAV DATA block and enter the applicable heading and deviation information in the MH, DEV, and CH blocks. No other entries are required.

#### 11.8.2. Airspeed Calibration.

11.8.2.1. Compute a true airspeed check within 1 hour after reaching the initial cruise altitude and after each altitude change of greater than 4,000 feet after the initial check. Aircraft with an operable and reliable transducer need only accomplish a true airspeed check at the initial cruise altitude.

11.8.2.2. Use the Airspeed Calibration section of the AF Form 4138 for true airspeed calibration checks. All blocks are self-explanatory except the following:

**EXCEPTION:** A true airspeed check is not required on low-level routes.

11.8.2.3. IAS, CAS, EAS, TAS. Use the ICE-T method in AFPAM 11-216 to convert indicated airspeed (IAS) to true airspeed (TAS). Use the appropriate flight performance manual for airspeed corrections.

**NOTE:** FSOs on the EC-130J will use  $IAS = CAS$  for cruise altitude airspeed checks. To convert CAS to EAS, use the **Compressibility Correction to Calibrated Airspeed** chart and procedure published in the aircraft performance manual, T.O. 1C-130J-1-1.  $EAS = CAS - \Delta V_c$ .

11.8.2.4. ITAS. Subtract indicated true airspeed from computed TAS. The result will be the ITAS correction (CORR). FSOs should check navigation system TAS sources for accuracy, since system TAS errors will effect computed wind data, and could adversely effect computed ETE / ETA data.

#### 11.9. AF Form 4138 Inflight Navigation Log:

11.9.1. The AF Form 4138 navigation log will be used to document proposed and observed data obtained inflight and to substantiate the progress and position of the aircraft (See **Figure 11.3.** and **Figure 11.4.**). The inflight navigation, fuel and calibration sections will be completed in sufficient detail to fully evaluate or reconstruct the flight. The inflight navigation log uses the single line entry format where actual and proposed data use the same format on separate line entries. The NAV DATA and REMARK areas will be used to substantiate each line of the form, as necessary. Information associated with inflight fuel management, and calibration checks are included on this form, and are discussed in other sections of this instruction. The procedures listed below are designed to accommodate a wide range of EC-130J mission profiles.

11.9.2. All applicable blocks of the inflight navigation log require an entry when a Fix, DR, or alter-heading (A/H) line is required, except in the following circumstances:

11.9.2.1. On departure, approach, and other segments of the flight under positive radar control.

11.9.2.2. When numerous heading changes are required for weather, traffic, etc., making the accomplishment of the entries impractical.

11.9.2.3. When an entry is the same as the entry above it, a check mark or down arrow may be used to indicate "same as previous entry."

11.9.3. Fix, Dead-reckoning (DR), and Alter-Heading (A/H) log procedures.

11.9.3.1. Fix entries will include time, position, position source and the following instantaneous information: true course (TC), Wind (W/V) referenced to true north, Drift Correction Angle (DCA), True Heading (TH), Variation (VAR), Magnetic Heading (MH), True airspeed (TAS), Ground Speed (GS), altitude (ALT), and ETA to Next Ch Pt. When an ETA to Next Ch Pt is included on an A/H line entry following a fix, it may be more desirable to only calculate the ETA on the A/H line. Fix-to-fix procedures, which use average values for fix line documentation, are not normally applicable to the EC-130J.

11.9.3.2. When DR positions are required, full line entries will include GMT time, DR position symbol and the following average information: True course (TC), Wind (W/V) referenced to true north, Drift Correction Angle (DCA), True Heading (TH), Variation (VAR), Magnetic Heading (MH), True airspeed (TAS), and Ground Speed (GS). Also include the TIME used to calculate the ground distance (GD), the calculated GD, and altitude (ALT) at the time of the DR position

11.9.3.3. Alter-Heading (A/H) Computations.

11.9.3.3.1. A/H lines will contain “the best known information” required to proceed to a point or abeam a point down track indicated in the NEXT CK PT block.

11.9.3.3.2. TAS. Enter the proposed true airspeed from the A/H point to the next position.

11.9.3.3.3. TC. Enter the average true course from the A/H point to the next position.

11.9.3.3.4. W/V. Wind and drift block. A best known or spot wind obtained from a reliable navigation source may be used in the W/V block. This W/V is normally referenced to true north.

11.9.3.3.5. Calculated drift correction angle (DCA) and groundspeed will correspond to the proposed wind, TC and TAS annotated.

11.9.3.3.6. VAR. Enter the average variation from the A/H point to the next position.

11.9.3.3.7. Calculate TH and MH to complete the alter heading entry

11.9.4. Inflight navigation log entries.

11.9.4.1. GMT. Enter the Greenwich Mean Time for the position or alter-heading.

11.9.4.2. FIX SYM. Identifies the type of information contained on this line. A line entry may be a fix, dead reckoning position (DR), or alter-heading (A/H).

11.9.4.3. NAV DATA. Enter one of the following for a fix:

11.9.4.3.1. Position coordinates (latitude and longitude) to include source, if not defined in the FIX SYM column.

11.9.4.3.2. Proper name, ICAO identifier of the navigation facility (e.g. “SIE” for the VORTAC), or geographic point.

11.9.4.3.3. Number or letter corresponding to the specific fix or position on the navigation chart.

11.9.4.4. TC. Normally the True Course is derived mathematically from TH and DCA information for fix and dead reckoning fix positions. Enter the proposed TC for alter-heading lines. When degraded navigation procedures are required enter Spot TC for fixes and the average observed TC for dead reckoning positions.

11.9.4.5. W/V (wind). All winds are referenced to true north unless identified otherwise. For fixes, obtain a spot wind or calculate a spot wind based on spot drift, course and speed information. Enter the best-known wind for A/H calculations, or computed average wind for dead-reckoning positions based on average data entries in the inflight navigation log.

11.9.4.6. DCA (drift correction angle). Normally spot DCA obtained from reliable navigation system sources will be used for fixes (other than degraded navigation procedures). Calculate drift correction for an A/H using the best-known TC, wind, and TAS information. For dead reckoning positions enter an average DCA obtained from a reliable navigation system source. When degraded navigation procedures are required enter the calculated spot DCA for fixes and the DCA calculated from average information for dead reckoning positions.

11.9.4.7. TH. For fixes, enter the spot TH computed from spot values of compass heading, compass deviation, and magnetic variation. Enter the average true heading; computed from average values of compass heading, compass deviation, and magnetic variation (from the last fix or DR position as appropriate) for a DR.

11.9.4.8. ALT. Enter the altitude flown at the GMT of the log entry. Annotate altitude changes since the previously logged position in the remarks section.

11.9.4.9. TIME. Enter the time corresponding to the distance(s) calculated in paragraph [11.9.4.10](#).

11.9.4.10. AD/GD. Air distance / ground distance. Enter the ground distance (computed from the average ground speed and time) for a DR position.

11.9.4.11. TAS. True Air Speed. For fixes, use spot TAS information. For A/H computations used the proposed TAS. Compute Dead reckoning position data using average true airspeed.

11.9.4.12. GS. Ground Speed. Normally fixes will utilize spot GS obtained from reliable navigation sources, while dead reckoning positions use average GS. Compute GS for an A/H line using the best-known wind and proposed TAS information.

11.9.4.13. NEXT CK PT. For each fix or A/H entry, identify the next checkpoint and document an estimated time of arrival (ETA).

#### 11.9.5. Other inflight navigation log entries.

11.9.5.1. REMARKS. Use the REMARKS sections to record pertinent information and events along with the time of the event. Remarks will include, but not be limited to, clearances, equipment malfunctions, navigation computer updates, FSO changeovers, and alter headings. Alter headings may be individually plotted or averaged to obtain DR or air-plot positions.

11.9.5.2. CLEARANCE / REMARKS. Enter ATC clearances as discussed in paragraph [11.1.3](#). When practical, record assigned ATC frequencies in this section. Use this section to record other pertinent flight information as required.

11.9.5.3. Use the NAV DATA or REMARKS section to record actual and corrected readings (if applicable). EGI, INS, or GPS positions are required for each recorded fix position and are desirable at all intermediate positions to ensure maximum accuracy in course centerline navigation. Identify and record the navigation solution recorded. If navigation solutions are updated, reflect this in the remarks.

**11.10. Airborne Directed Approach (ADA) Procedures.**

11.10.1. All ADAs will be flown using standard DOD or FLIP terminal non-precision instrument approach procedures as outlined in para **6.59.3**.

11.10.2. For IFR operations, weather minimums will be 500-feet and 1 mile, or as published for the approach, whichever is greater.

11.10.3. The Minimum Descent Altitude (MDA) and Height Above Airdrome (HAA) for the approach will be as published or based on a HAA of 500 feet, whichever is greater.

11.10.4. Pilots will use all available aircraft systems to monitor the progress to the approach.

11.10.5. The FSO will use all avionics system, other than TACAN, VOR, ILS, MLS and NDB, to monitor the position of and direct the aircraft. The aircraft radar will be used as the primary aircraft position reference.

11.10.6. Crew Coordination. Prior to commencing the approach, the FSO will brief and coordinate the following procedures with the pilots.

11.10.6.1. Brief the published approach to be flown, to include revised MDA and weather minimums.

11.10.6.2. Brief the published missed approach procedures.

11.10.6.3. Brief Calls to be used during the approach.

11.10.7. The FSO will direct the aircraft by headings from the Initial Approach Fix (IAF) to the Missed Approach Point (MAP) and provide altitude information reference the published course and altitude restrictions.

11.10.8. The FSO will state the distance to each significant point on the published approach procedure every mile, normally beginning 5 miles from each point.

11.10.9. During the final approach, the FSO will give course reference and heading information at least every mile from the Final Approach Fix (FAF) to the Missed Approach Point (MAP).

11.10.10. In accordance with **Chapter 5**, the pilot will make standard non-precision advisory calls approaching the MDA.

Figure 11.1. CFPS Flight Plan (No Inflight Refueling).

CFPS Verion 3.2 FLIGHT PLAN for the C-130J  
Route: C:\route\J\_KMDTTJNR.rte

Date Flt Plan Printed: 200210171432

ROUTE DATE: 17 OCT 02		ACFT #: 1933		BASIC WT: 85000		1. FUEL BURN: 21110 (INCLUDES STTO & HOLDING)		6. INDENT EXTRA: 0								
DAFIF DATE: 3 OCT 02		ACFT TYPE: ST		CARGO WT: 10000		2. RESERVE: +27 1.6 TFF: 3.5		7. ACTUAL FUEL: 32.0								
CALL SIGN: BONGO 33		DRAG INDEX: 0.00		RAMP INT: 32000		3. ALTERNATE: +12 0.7		8. REQ FUEL (1+2+3+4+5+6) 27.4								
		INITIAL TEMP DEV: +0D		FUEL EXT: 0		4. APPROACH 0.0 or 0.7		9. UNIDENT EXTRA: 4.6								
FSO: J. VILA		PILOT: B. RIPPER		RAMP WT: 127000		5. LANDING 4.0		10. REQ O/H FUEL (3+4+5+HOLDING) 6.7								
T/O GROSS WT: 126.2																
WPT	AR/ FIR	IDENT RTE FIX	TAC VOR	LAT LON	ELEV VAR	ALT TD	W/V DCA	MC MH TC	ZD TD	IAS TAS GS	ZT TT	ETA RETA	ATA	TDR TTR	F-FLOW FUEL-R	NOTES
1		KMDT 31/RW HARRISBURG IN		N 40 11.26 W076 44.89	308 11.4W	308M +0C	0	308 308 297	0 0		+00 +00			1505 05+06	31200	
2		DQO/R DUFONT	087X 114.00	N 39 40.69 W075 36.43	70 12.0W	27000M +0C	270/025 2	132 135 120	61 61 300	198 300 321	+17 +17			1444 04+49	3681 29453	
3		SIE SEA ISLE	095X 114.80	N 39 05.73 W074 48.02	10 12.3W	27000M +0C	270/040 5	145 150 133	51 112 300	198 300 328	+09 +26			1393 04+39	3676 28879	
4	KZNY	CHAMP B24 CHAMP		N 37 31.01 W071 40.97	unk 13.7W	27000M +0C	270/040 4	134 138 122	175 287 300	198 300 333	+32 +58			1218 04+08	3657 26959	
5		DOWNT A300 DOWNT		N 35 54.96 W070 44.49	unk 13.8W	27000M +0C	270/040 7	168 175 154	106 393 300	198 300 315	+20 01+18			1111 03+48	3634 25735	
6		LACKI A300 LACKI		N 33 29.30 W069 22.78	unk 13.8W	27000M +0C	270/040 7	169 175 155	160 554 300	198 300 315	+31 01+48			951 03+17	3612 23897	
7		HOLMA A300 HOLMA		N 31 39.02 W069 03.12	unk 13.5W	27000M +0C	270/035 7	185 192 171	111 665 300	198 300 303	+22 02+10			840 02+55	3590 22579	
8		SIMBA A300 SIMBA		N 26 55.39 W068 15.42	unk 12.9W	27000M +0C	270/035 7	185 192 171	286 951 300	198 300 303	+57 03+07			554 01+59	3559 19222	
9	TJZS	KRAFT A300 KRAFT		N 23 30.00 W067 43.00	unk 12.5W	27000M +0C	270/030 6	185 190 172	207 1158 300	198 300 303	+41 03+48			347 01+18	3524 16815	
10		LENNT A300 LENNT		N 21 15.93 W067 07.56	unk 12.4W	27000M +0C	270/030 6	179 184 166	138 1295 300	198 300 306	+27 04+15			210 +51	3501 15240	

193 SOW FORM 4138

Route: C:\route\J\_KMDTTJNR.rte

Date Flt Plan Printed: 200210171432

WPT	AR/ FIR	IDENT RTE FIX	TAC VOR	LAT LON	ELEV VAR	ALT TD	W/V DCA	MC MH TC	ZD TD	IAS TAS GS	ZT TT	ETA RETA	ATA	TDR TTR	F-FLOW FUEL-R	NOTES
11		PLING A300 PLING		N 19 59.53 W066 47.88	unk 12.4W	27000M +0C	270/025 5	179 183 166	78 1374 300	198 300 305	+15 04+30			131 +35	3488	
12		JAAWS A300 JAAWS		N 18 58.70 W066 32.44	unk 12.4W	27000M +0C	270/025 5	179 183 166	62 1436 300	198 300 305	+12 04+43			69 +23	3479	
13		SJU/R SAN JUAN	087X 114.00	N 18 26.78 W065 59.37	7 12.6W	27000M +0C	270/025 3	148 151 135	45 1481 300	198 300 317	+08 04+51			24 +14	3473	
14		NRR/T ROOSEVELT ROA	085X	N 18 14.03 W065 38.60	275 12.7W	27000M +0C	270/025 3	135 138 123	23 1504 300	198 300 321	+04 04+56			1 +10	3469	
15		TJNR/A ROOSEVELT ROA		N 18 14.71 W065 38.61	38 12.7W	38M +0C	270/025 -5	012 007 360	1 1505		+10 05+06			0 +00	10890	

193 SOW FORM 4138

Figure 11.2. AF Form 4138 Manual Flight Plan (No Inflight Refueling).

FSO		EC-130 FLIGHT PLAN AND NAVIGATION LOG												DATE		11-Sep-02		MANUAL FUEL PLANNING		T/O FUEL		T/O GROSS WT				
Lt Col. Jake Vila		CALL SIGN			FROM			HARRISBURG IAP, PA ( KMDT )			TO			ROOSEVELT ROADS NS ( TJNR )			PLANNED T/O TIME		1500		DRAG INDEX		0		SEGMENT FUEL EQUALS CRUISE FUEL FLOW x SEGMENT ETE	
Major B.D Ripper		BONGO 33																								
WPT	ROUTE	TO	ALT	TAS	WIND	TC	VAR W+/-E	MC	DCA	MH	ZONE DIST	TOTAL DIST	GS	ZONE TIME	TOTAL TIME	ETA RETA	ATA	CLIMB OR SEGMENT FUEL	FUEL REMAINING	A/G GROSS WT						
1	KMDT	40-11.62 N 076-45.80 W																								
2	DQO	39-40.69 N 075-36.43 W	27.0	300	270 / 25	120	+11	131	+2	133	62	62	235	+16	+16	1518		→ -2.0	29.2	124.2						
3	SIE	39-05.73 N 074-48.02 W	↓	↓	270 / 40	133	+12	145	+5	150	51	113	328	+09	+27	1529										
4	B24 CHAMP FIR KZNY	37-31.01 N 071-40.97 W	↓	↓	↓	122	+13	135	+4	139	175	288	333	+32	+59	1601		1+56 @								
5	A300 DOWNT	35-54.96 N 070-44.49 W	↓	↓	↓	154	+14	168	+7	175	106	394	315	+20	1+19	1621		FF3640								
6	A300 LACKI	33-29.30 N 069-22.78 W	↓	↓	↓	155	+14	169	+7	176	160	554	315	+31	1+50	1652										
7	A300 HOLMA	31-39.02 N 069-03.12 W	↓	↓	270 / 35	171	+13	184	+7	191	111	666	303	+22	2+12	1719		→ -7.0	22.2	117.2						
8	A300 SIMBA	26-55.38 N 068-15.42 W	↓	↓	↓	171	+13	184	+7	191	286	952	303	+57	3+09	1811		2+05 @								
9	A300 KRAFT FIR TJZS	23-30.00 N 067-43.00 W	↓	↓	270 / 30	172	+12	184	+6	190	207	1158	303	+41	3+50	1852		FF3560								
10	A300 LENNT	21-15.93 N 067-07.57 W	↓	↓	↓	166	+12	178	+6	184	138	1296	306	+27	4+17	1919		→ -7.4	14.8	109.8						
11	A300 PLING	19-59.53 N 066-47.88 W	↓	↓	270 / 25	166	+12	178	+5	183	78	1374	305	+15	4+32	1934										
12	A300 JAAWS	18-58.70 N 066-32.44 W	↓	↓	↓	166	+12	178	+5	183	62	1437	305	+12	4+44	1946		0+41 @								
13	RTE 3 SJU	18-26.78 N 065-59.37 W	↓	↓	↓	135	+12	147	+3	150	45	1481	317	+08	4+52	1954		FF3480								
14	NRR	18-14.15 N 065-38.62 W	↓	↓	↓	122	+12	134	+3	137	23	1505	321	+04	4+58	2000		→ -2.4	12.4	107.4						
15	TJNR	18-14.71 N 065-38.61 W												+10	5+08											
																			TOTAL							
																			18.8							

[illegible][illegible]

## Chapter 12

### FUEL PLANNING AND INFLIGHT MANAGEMENT

#### *Section 12A— General Fuel Planning Procedures*

**12.1. General.** This chapter will assist planners and FSOs in planning EC-130J fuel requirements for missions with or without inflight refueling. The computer flight plan (CFP) and T.O. 1C-130J-1-1 are the primary preflight fuel planning references. The SOF Mission Planning (SOFMP) system, to include CFPS / PFPS software, is the primary method of fuel planning.

12.1.1. All EC-130J Commando Solo and Super J flight operations will use fuel planning and enroute fuel management procedures and forms prescribed by this instruction. Any reference to the EC-130J aircraft in this chapter is applicable to the Commando Solo (CS), Super J (SJ), and Super J Special Mission (SM) operations unless otherwise specified.

12.1.2. Forms. This chapter contains instructions for completion of the fuel planning and inflight fuel management sections of the AF Form 4138, **EC-130 Flight Plan and Navigation Log**; AF Form 4139, **Special Operations C-130 Inflight Refueling Worksheet**; and AF Form 70, **Pilot's Flight Plan and Flight Log**. Computer flight plan (CFP) forms may be used in lieu of fuel planning portion of the AF Form 4138 or AF Form 70; using formats approved by the unit Stan/Eval.

12.1.3. Normally, fuel data obtained from an accurate CFPS / PFPS generated CFP, which utilized the appropriate aircraft performance module, will satisfy the fuel planning requirements of this instruction. However, the FSO will verify the accuracy of the CFP and should complete an AF Form 4138, AF Form 4139, or AF Form 70 to verify all fuel and reserve requirements prior to flight.

12.1.3.1. PFPS/CFPS will be configured to calculate cruise fuel use Range Summary data.

12.1.3.2. Use the aircraft mission computer to verify computer flight plan fuel loads prior to take-off, when possible.

12.1.4. Always flight plan to overhead destination at the final enroute cruise altitude. Unless specified otherwise, overhead the destination / abort airfield is defined as a terminal NAVAID / fix within 25 NM of or overhead the destination / abort airfield. For fuel planning purposes, this will preclude adding approach fuel when an enroute descent is planned and flown. When planning to initiate a complete approach from overhead destination at cruise altitude, a 700-pound approach fuel entry is required per **Table 12.1.**

12.1.5. Temperature Deviation. The appropriate temperature deviation will be used to determine the optimum cruise altitude for each route segment and to calculate accurate enroute calibrated airspeeds. It is not necessary to enter temperature deviation into computer flight plans specifically for fuel planning purposes, since the affect on cruise fuel calculations is negligible.

12.1.6. Use T.O. 1C-130J-1-1, 4 engine, normal bleed “ATC Cruise Ceiling” charts to determine the cruise altitude ceiling for both manual and computer generated flight plans.

12.1.7. Calculate fuel reserves using Terminal Fuel Flow (TFF) for the applicable route segment unless specified otherwise.

12.1.8. Use fuel planning factors as outlined in **Table 12.1.** to calculate and/or verify fuel loads.

## 12.2. Alternate and Inflight Refueling Abort Fuel Planning.

12.2.1. Destination divert fuel planning requirements. When an alternate is required, EC-130J aircrews will plan to be overhead the destination airfield with sufficient fuel to proceed to the furthest alternate, hold at the alternate accomplish a descent/approach and land with a minimum of 4,000 pounds of fuel. If a visibility only approach is planned at the destination airfield, 2,000 pounds of additional fuel is required to compensate for the climb enroute to the divert field. Approach and landing fuel is planned only once.

12.2.2. Inflight refueling abort base fuel planning requirements. All route segments, which include an inflight refueling, should be planned with sufficient fuel onboard to fly from the departure airfield or previous End Air Refueling point (EAR) to an EAR point, and if required, divert so as to arrive overhead the abort airfield with sufficient fuel to hold, accomplish a descent/approach and land with a minimum of 4,000 pounds of fuel (IAW [Table 12.1](#) requirements) without receiving an onload. An alternate to the inflight refueling abort base is not required, but when the aircrew believes weather or other circumstances justify including an alternate to the abort airfield, then include it as part of the required overhead fuel for the inflight refueling abort airfield.

12.2.3. Normally, the destination divert or inflight refueling abort profile is based on direct routing at 260 KTAS at 10,000 feet for alternates within 200 NM of the destination airfield / EAR point, and FL210 or FL220 at Long Range Cruise (LRC) speed for alternates beyond 200 NM. Calculate divert/abort fuel using one of the following:

12.2.3.1. Calculate manually using the applicable TFF for the enroute time to the destination divert or inflight refueling abort airfield.

12.2.3.2. Calculate using the divert (DVT) feature of CFPS and the guidelines of [para 12.2.3](#).

## 12.3. Fuel Conservation .

12.3.1. Conservation of fuel requires everyone's active participation. Do not carry extra fuel for convenience. Unidentified extra fuel should not exceed 2000 pounds.

12.3.2. Extra fuel (identified extra) may be added:

12.3.2.1. When fuel availability is limited or not available at enroute stops.

12.3.2.2. For known holding delays in excess of standard.

12.3.2.3. For anticipated off course weather avoidance.

12.3.3. Planning guidelines for fuel conservation:

12.3.3.1. Long-range cruise (LRC) and optimum altitude should be flown (when possible).

12.3.3.2. Limit the use of the APU when possible.

12.3.3.3. Delay engine start.

12.3.3.4. Cruise CG should be aft if practical.

12.3.3.5. Fly enroute descents when possible.

## ***Section 12B— Fuel Planning Procedures***

**12.4. Computer Flight Planned Fuel Analysis.** Fuel data obtained from approved computer flight planning systems is the preferred method used to accomplish fuel planning for the EC-130J, and may be used in lieu of enroute fuel derived from T.O. 1C-130J-1-1 performance data. AF Form 4138 fuel analysis blocks may be reproduced in the computer flight plan printed format (see [Figure 12.1.](#)). Additionally, AF Form 4138, AF Form 4139, AF Form 70 fuel analysis may be accomplished using enroute fuel and terminal fuel flow data derived from computer generated flight plans.

**NOTE:** When fuel analysis is accomplished using a computer flight planning system, use the fuel flow from the last applicable route segment for calculations requiring a terminal fuel flow value as outlined in [Table 12.1.](#)

12.4.1. Computer generated fuel planning. With the exception of those items explained in this paragraph, all items required for computer generated fuel analysis are explained in the Fuel Load Components chart as outlined in [Table 12.1.](#)

12.4.1.1. Cruise profiles. To ensure the accuracy of computer generated fuel analysis, CFPs must include accurate route, altitude, airspeed, wind, drag index, fuel load and aircraft gross weight information.

12.4.1.2. When planning route segments which include an inflight refueling, accomplish computer generated fuel planning using the flight planned altitude profile from takeoff to overhead destination.

12.4.1.3. Drag Index. The unit Stan/Eval will designate drag index values, associated with variant configurations of assigned aircraft, to use for computer generated fuel analysis data.

**12.5. Manual Fuel Planning.** Accomplish manual fuel planning for the EC-130J aircraft IAW T.O. 1C-130J-1-1 using the flight plan and AF Form 4138, AF Form 4139, or AF Form 70 fuel analysis formats. Ensure all required fuel computations are accurate and complete, and confirm the ramp fuel load is compatible with mission requirements. With the exception of those items explained in this section, all items of the fuel analysis portion of the AF Form 4138, AF Form 4139, and AF Form 70 are explained fully in [Table 12.1.](#) See [Figure 12.2.](#) and [Figure 12.5.](#) for examples of the following procedures.

12.5.1. Drag Index. The unit Stan/Eval will designate drag index values, associated with variant configurations of assigned aircraft to use for T.O. 1C-130J-1-1 manual fuel planning.

12.5.2. Manual fuel planning will require dividing the route of flight into multiple leg segments of not more than 2+30 hours each starting at initial level-off. Each fuel-planning segment should be composed of one or more flight plan legs containing common cruise profile characteristics, i.e. altitude and airspeed. Legs that include descends to inflight refueling altitude may be included as part of the segment prior to the descent. Significantly shorter route segments may be required, when significant cruise profile changes are made.

12.5.2.1. Initial and enroute climbs of greater than 5,000 feet will require separate flight plan line entries and fuel calculations using T.O. 1C-130J-1-1 climb distance, time, and fuel charts. Fuel for route segments including enroute climbs of 5, 000 feet or less may be calculated at the planned enroute fuel flow without taking into account climb fuel since the fuel burn increase is negligible.

12.5.2.2. Use T.O. 1C-130J-1-1 Range Summary charts to calculate fuel flow for each route segment from the Top of Climb (TOC) to overhead destination. Interpolation between TAS charts and the use of temperature deviation and drag index corrections for variant configurations will be required.

12.5.2.3. For routes that include inflight refueling, all flight plan legs at A/R altitude and airspeed are normally combined into one segment. Using this method, the increased fuel burn rate for time on the A/R track will be taken into account by using the correct Range Summary chart for flight conditions.

12.5.3. Calculate fuel required for each route segment as follows. Enter the Range Summary chart with applicable flight condition information, and the estimated aircraft gross weight at mid segment, to determine the average fuel flow for the route segment. Calculate the fuel required for each segment using the Range Summary Fuel Flow and total ETE for the segment. For A/R route segments only, add half the planned onload to the estimated mid point gross weight prior to entering the Range Summary chart. This method will ensure accurate fuel burn rates for manual fuel planning.

12.5.4. Route legs that include a descent may be included with previous legs at a common cruise profile. This procedure will simplify calculations and result in more conservative fuel values.

12.5.5. To determine ENROUTE fuel entries for the AF Form 4138, AF Form 4139, or AF Form 70 using manual fuel planning procedures, add the fuel for all climb and enroute segments as applicable.

12.5.6. For flight plans that include inflight refueling, insert a separate flight plan line identified as "ONLOAD" and the planned fuel onload. Add this planned fuel onload to the Fuel Remaining and A/C Gross Wt, to continue manual fuel calculations.

## **12.6. AF Form 4138 Fuel Analysis:**

12.6.1. The AF Form 4138 fuel analysis section may be used for fuel planning when the route of flight is planned either manually or with an approved computer flight planning system, and the mission does not include inflight refueling (See [Figure 12.3.](#)). When an inflight refueling is planned, use the AF Form 4139 for fuel analysis. With the exception of those items explained in this section, all items required for AF Form 4138 fuel analysis are explained in the Fuel Load Components chart as outlined in [Table 12.1.](#)

12.6.2. ENROUTE. Fuel required for the flight time from departure to overhead destination using the flight planned cruise altitude profile.

12.6.3. RESERVE (item 2). Calculate at TFF for ten percent of the Category I route not to exceed 45 minutes or 20 minutes whichever is greater, for flights that do not include an inflight refueling. No entry required for Category 1 route segments less the 2 hours.

12.6.4. ALTERNATE (item 3). Plan alternate fuel using CFPS generated fuel data for the desired altitude and airspeed profile or calculate using TFF procedures.

12.6.5. HIGHEST ACC FL. The highest cruise altitude or ceiling achieved using the planned climb profile based on planned takeoff gross weight, and without regard to ATC requirements for direction of flight. When passengers are carried and oxygen is not available to them, the HIGHEST ACC FL will not exceed FL 250. Enter the flight level to the nearest 100 feet.

12.6.6. **ENDURANCE.** Flying time based on total fuel available at takeoff. When using **AF Form 4138** fuel analysis, calculate as follows. Add the Identified Extra (item 6), Unidentified Extra (item 11), and Required Over Dest (item 12) fuel values and determine the flying time available at TFF. Then, add this value to the total time for Enroute (item 1), Reserve (item 2), and Alternate and Missed Approach (item 3) to determine the Endurance time.

12.6.7. For AF Form 4138 formatted CFPS flight plans; the Fuel Burn block of the fuel analysis section may be a combination of Enroute, STTO, and Holding fuel.

## ***Section 12C— Fuel Planning for Inflight Refueling***

### **12.7. Fuel Planning for A Single Inflight Refueling**

12.7.1. The AF Form 4139 is applicable to both single and double Inflight refueling planning. The **EAR #1 TO EAR #2** and **EAR #2 TO A/R #2 ABORT BASE** sections of this form are not applicable to single inflight refueling planning. See **Figure 12.6.**, this figure uses fuel data derived from the CFP in **Figure 12.4.** All items are self-explanatory except as noted below.

12.7.2. Information common to all sections:

12.7.2.1. Item A, **OPERATING WEIGHT**, is the basic aircraft operating weight plus the cargo/pax weight.

12.7.2.2. Ensure the aircraft gross weight does not exceed allowable limits for either ground or air refueling operations, without proper waiver authority.

12.7.3. Section I, **TAKEOFF TO EAR #1:**

12.7.3.1. **ENROUTE** (item 1). Time and fuel from **TAKEOFF** to **EAR #1**. Calculate enroute fuel from T/O to EAR using the flight planned cruise profile from takeoff to the EAR point. For manual fuel planning, the increased fuel burn for time spent at lower altitude while on the A/R track will be taken into account by grouping the inflight refuel track legs into a single segment for manual fuel planning and using the appropriate performance charts.

12.7.3.2. **IDENTIFIED EXTRA** (item 3). IAW with **Table 12.1.**

12.7.3.3. **RESERVE** (item 5). Ten percent of the Category I route from takeoff to end air refueling. 45 minutes maximum.

12.7.3.4. **FUEL AT EAR #1 (No Onload) B-6**, (item 7). Fuel remaining at the **EAR #1**, does not include the inflight A/R onload.

12.7.3.5. **PLANNED EAR #1 FUEL** (item 8). Planned fuel at **EAR #1** including the planned fuel transfer.

12.7.4. Section II, **EAR #1 TO A/R #1 ABORT BASE:**

12.7.4.1. Complete in the event of an unsuccessful fuel transfer. An abort base is required for all refueling tracks. The departure base may be used. The designated abort base must meet alternate airfield weather requirements.

12.7.4.2. **ENROUTE** (item 9). Time and fuel from **EAR** to the abort base. An abort base is required for all refueling tracks. Departure base may be used. Abort base must meet alternate airfield weather requirements.

Table 12.1. AF Form 4138 and 4139 Fuel Load Components.

1. EN ROUTE		Fuel for flight time from departure or EAR to EAR or overhead destination at cruise altitude (including time for planned climbs, mission delays, or recovery when applicable).	R E Q U I R E D  O V E R H E A D  D E S C E N D	F L I G H T  P L A N N E D	R E Q U I R E D  R A M P
2. EN ROUTE RESERVE		10% of the flight time over a Category I route or segment up to 45 minutes or 20 minutes, whichever is greater. For EC-130 mission orbit delays, include 10% flight time for only the Category I route returning from the mission delay area to a Category II route or destination. Compute at terminal fuel flow.			
3. ALTERNATE  AND  MISSED APPROACH		<b>Alternate:</b> Fuel for flight time from overhead destination or EAR abort airfield to alternate, or most distant alternate when two are required. CFPS generated or compute at terminal fuel flow. Add 10% reserve when the time to an alternate exceeds 1 + 30. Entry required whenever an alternate must be filed.  <b>Missed Approach:</b> 2000 pounds. Entry required if the destination is below ceiling minimums, but above visibility minimums for the planned destination approach.			
4. HOLDING		Entry always required. Normally 2000 pounds. When an alternate is not available or for locations in Alaska or at latitudes greater than 59 degrees North or South, use 3500 pounds. Alternately, crews may compute holding fuel using terminal fuel flow for 30 / 45 minutes respectively.			
5. APPROACH AND LANDING		<b>Approach fuel:</b> 700 pounds. Entry not required when an enroute descent to final approach is planned. <b>Minimum landing fuel:</b> 4000 pounds. Entry always required. Do not include minimum landing fuel in BURNOFF.			
6.  I D E N T I F I E D  E N R O U T E  F U E L	PRESSURIZATION LOSS	Additional fuel for pressure loss at ETP - used when pressurized, carrying passengers, and aircraft oxygen is not available to the passengers. Compute at 1000 pounds per hour for time from the ETP to FSAFor LSAF using ETP ("T") time. If the computed fuel required for pressurization loss is less than Reserve ( item 2 ) plus holding ( item 4 ), then no additional entry required. If computed fuel exceeds the combined reserve fuel ( item 2 ) and holding ( item 4 ), add only the difference here.	L O A D  L O A D	F U E L  L O A D	F U E L  L O A D
	STORED FUEL	Ramp fuel for succeeding legs without refueling.			
	OFF-COURSE MANEUVERS	Fuel for anticipated off-course maneuvering for terrain clearance, thunderstorm avoidance, ATC requirements. Compute at 60 pounds per minute for departure, 40 pounds per minute for en route fuel.			
	ICING	500 pounds for each hour of anticipated icing.			
	KNOWN DELAYS OR HOLDING	Fuel for anticipated or planned delays or excess holding time. Compute at terminal fuel flow. EC-130 mission orbit delay fuel is normally included in en route fuel ( item 1 ).			
	INSUFFICIENT OR UNRELIABLE NAVAIDS	1000 pounds maximum. Add for insufficient or unreliable NAVAIDS at destination.			
7. STTO		Fuel for Start Engines, Taxi and Takeoff. Normally 800 pounds. For known taxi delays or additional engine-running ground time in excess of 30 minutes, add an additional 30 pounds per minute.			
8. UNIDENTIFIED EXTRA		Difference between required ramp and actual ramp fuel. Normally, should not exceed 3500 pounds for fuel conservation purposes.			
9. REQUIRED OVER DESTINATION		Total of items 3 ( alternate or missed approach ), item 4 ( holding ), and item 5 ( approach and landing ). Entry will never be less than 6000 pounds.			
10. BURNOFF		Total en route fuel ( item 1 ), plus STTO ( item 7 ), plus identified extra fuel ( item 6 ) except stored fuel, plus 700 pounds approach fuel when required. Entry optional.			

12.7.4.3. RESERVE (item 10). Ten percent of the Category I route from end air refueling to abort base. The combined total for item 5 plus item 10 should not exceed 45 minutes. If the combined total exceeds 45 minutes, add only the balance for a total of 45 minutes in this block. Likewise if the total for items 5 plus 10 are not at least 20 minutes, use a value in item 10 to bring the total to a minimum of 20 minutes. Entry only required when the flight time from the EAR to alternate exceeds 2 hours.

12.7.4.4. A/R #1 ABORT ALTERNATE (item 11). Optional entry.

12.7.4.5. HOLDING (item 12). Normally 2000 pounds, except when an alternate is not available, or locations in Alaska, or at latitudes greater than 59 degrees North or South, use 3500 pounds. Alternately, may compute this using terminal fuel flow for 30 / 45 minutes respectively.

12.7.4.6. PLANNED RAMP FUEL (item 16). Must be sufficient to meet the requirements of (item 17, required ramp fuel) and the requirements of Section V fuel planning.

12.7.4.7. REQUIRED RAMP FUEL (item 17). Fuel required from departure to the end air refueling point and continue to the A/R abort base with required reserves, in the event of an unsuccessful fuel transfer during the A/R. Includes fuel required to fly the entire air refueling track without a successful fuel transfer.

12.7.4.8. UNIDENTIFIED EXTRA (item 18). Does not need to meet the normal requirement (not to exceed 2000 pounds), since item 8 (Planned EAR #1 Fuel) must be sufficient to meet Section V, EAR to destination fuel requirements. If unidentified extra fuel is excessive, consideration should be given to reducing the proposed ramp fuel and increasing the proposed A/R onload if possible.

12.7.5. Section III, **EAR #1 TO EAR #2**. Not applicable to single inflight refueling missions.

12.7.6. Section IV, **EAR #2 TO A/R #2 ABORT BASE**. Not applicable to single inflight refueling missions.

12.7.7. Section V, **EAR TO DESTINATION:**

12.7.7.1. Items separated by a diagonal ( / ) in this section are applicable to both single and double inflight refueling missions. The item letter or number prior to the diagonal (/) applies to single inflight refueling planning.

12.7.7.2. ENROUTE (item 38). Time and fuel from end air refueling to overhead final destination. Use the planned cruise profile for fuel calculations.

12.7.7.3. RESERVE (item 39). Ten percent of the Category I route from EAR to destination, not to exceed 45 minutes.

12.7.7.4. HOLDING (item 41). Normally 2000 pounds, except when an alternate is not available, or locations in Alaska, or at latitudes greater than 59 degrees North or South, use 3500 pounds. Alternately, may compute this using terminal fuel flow for 30 / 45 minutes respectively.

12.7.7.5. REQUIRED EAR TO DEST (item 44). This is the actual fuel, including reserves, required at the EAR point to fly to the destination. Do not exceed the aircraft maximum gross weight limit established in the applicable flight manual. EAR aircraft gross weights greater than 155,000 pounds will require waiver authority IAW paragraph [4.16](#).

12.7.7.6. REQUIRED FUEL AT EAR (PRIOR TO ONLOAD) (item 47). The difference between the required EAR to destination fuel (item 44) and planned fuel onload from the tanker (item 45).

12.7.7.7. UNIDENTIFIED EXTRA. Subtract required fuel at EAR (prior to onload) (item 47) from the planned fuel at EAR (item 46). This value equals the extra fuel carried or additional fuel required (if negative) from the EAR to destination. When negative, additional fuel must be added, to ramp fuel, to the planned AR onload from the tanker, or in some situations may require moving the air refueling track or adding a second refueling.

## **12.8. Fuel Planning for Two Inflight Refuelings:**

12.8.1. The AF Form 4139 is applicable to both single and double Inflight refueling planning. All sections of this form are applicable to double inflight-refueling planning. See [Figure 12.9.](#), there are no examples of a computer or manual flight plans used to derive the specific data associated with this figure. All items are self-explanatory except as noted below.

12.8.2. Information common to all sections:

12.8.2.1. Item A, OPERATING WEIGHT, is the basic aircraft operating weight plus the cargo/pax weight.

12.8.2.2. Ensure the aircraft gross weight does not exceed allowable limits for either ground or air refueling operations, without proper waiver authority IAW paragraph [4.16](#).

12.8.3. Section I, **TAKEOFF TO EAR #1:**

12.8.3.1. EN ROUTE (item 1). Time and fuel from TAKEOFF to EAR #1. Calculate enroute fuel from T/O to EAR using the flight planned cruise profile from takeoff to the EAR point. For manual fuel planning, the increased fuel burn for time spent at lower altitude while on the A/R track will be taken into account by grouping the inflight refueling track legs into a single segment for manual fuel planning and using the appropriate performance charts.

12.8.3.2. IDENTIFIED EXTRA (item 3). IAW with [Table 12.1](#).

12.8.3.3. RESERVE (item 5). Ten percent of the Category I route from TAKEOFF TO EAR #1 not to exceed 45 minutes.

12.8.3.4. TOTAL (item 6). Total fuel required from TAKEOFF TO EAR #1. Does not include abort base fuel requirements.

12.8.3.5. FUEL AT EAR #1, no onload (item 7). Fuel remaining at the EAR point. This item does not include the inflight refueling onload for A/R #1.

12.8.3.6. PLANNED EAR #1 FUEL (item 8). Fuel at EAR #1 including the planned fuel onload. This fuel quantity must be sufficient to meet the fuel requirements of Section IV (EAR #2 to A/R #2 abort base, item 35) and Section V (Required fuel at EAR #2 prior to onload, item 47).

12.8.4. Section II, **EAR #1 TO A/R #1 ABORT BASE:**

12.8.4.1. Completed in the event of an unsuccessful fuel transfer for A/R #1. An abort base is required for all refueling tracks. The departure base may be used. The designated abort base must meet alternate airfield weather requirements.

12.8.4.2. EN ROUTE (item 9). Time from and fuel from EAR #1 to the abort base. An abort base is required for all refueling tracks. Departure base may be used. Abort base must meet alternate airfield weather requirements.

12.8.4.3. RESERVE (item 10). Ten percent of the Category I route from EAR #1 to the abort base. The combined total for item 5 plus item 10 should not exceed 45 minutes. If the combined total exceeds 45 minutes, add only the balance for a total of 45 minutes in this block. Entry only required when the flight time from the EAR #1 to alternate exceeds 2 hours.

12.8.4.4. A/R #1 ABORT ALTERNATE (item 11). Optional entry.

12.8.4.5. HOLDING (item 12). Normally 2000 pounds, except when an alternate is not available, or locations in Alaska, or at latitudes greater than 59 degrees North or South, use 3500 pounds. Alternately, may compute this using terminal fuel flow for 30 / 45 minutes respectively.

12.8.4.6. PLANNED RAMP FUEL (item 16). Must be sufficient to meet the requirements of (item 17, required ramp fuel) and the requirements of Section V fuel planning.

12.8.4.7. REQUIRED RAMP FUEL (item 17). This only considers the fuel required from departure to the end air refueling point and continue to the A/R abort base with required reserves, in the event of an unsuccessful fuel transfer during the A/R. It includes fuel required to fly the entire air refueling track without a successful fuel transfer. It does not consider the planned ramp fuel needed to complete the fuel requirements to the A/R #2 abort base or the destination.

12.8.4.8. UNIDENTIFIED EXTRA (item 18). Does not need to meet the normal requirement (not to exceed 2200 pounds), since item 8 (planned EAR #1 fuel) must be sufficient meet EAR #2 and A/R #2 abort base fuel requirements. If unidentified extra fuel is excessive, consideration should be given to reducing the proposed ramp fuel and increasing the proposed A/R onload, if possible.

#### 12.8.5. Section III, **EAR #1 TO EAR #2:**

12.8.5.1. EN ROUTE (item 20). Time and fuel from EAR #1 to EAR #2. Use the planned cruise profile for fuel calculations. For manual fuel planning, the increased fuel burn for time spent at lower altitude while on the A/R track will be take into account by grouping the inflight refueling track legs into a single segment for manual fuel planning and using the appropriate performance charts.

12.8.5.2. IDENTIFIED EXTRA (item 21), IAW with [Table 12.1](#).

12.8.5.3. RESERVE (item 23). Ten percent of the Category I route from EAR #1 to EAR #2, not to exceed 45 minutes.

12.8.5.4. FUEL AT EAR #2, NO ONLOAD (item 25). The planned fuel at EAR #1 minus the fuel required to fly from EAR #1 to EAR #2. This calculated fuel quantity is compared to the required fuel at EAR #2 prior to onload (block #47) to confirm sufficient fuel planned through EAR #2.

12.8.5.5. PLANNED EAR #2 FUEL (item 26). Do not exceed the aircraft maximum gross weight limit established in the applicable flight manual. End A/R aircraft gross weights greater than 155,000 pounds will require waiver authority IAW paragraph [4.16](#).

#### 12.8.6. Section IV, **EAR #2 TO A/R #2 ABORT BASE:**

12.8.6.1. Completed in the event of unsuccessful fuel transfer for A/R #2. An abort base is required for all refueling tracks. The designated abort base must meet alternate airfield weather requirements. This section is similar to the calculations for Section II, EAR #1 to A/R #1 abort base.

12.8.6.2. EN ROUTE (item 27). Time and fuel from EAR #2 to the abort base. An abort base is required for all refueling tracks.

12.8.6.3. RESERVE (item 28). Ten percent of the Category I route from EAR #2 to abort base. Combined total for item 23 plus item 28 should not exceed 45 minutes. If the combined total exceeds 45 minutes, add only the balance for a total of 45 minutes in this block. Entry only required when the flight time from the EAR #2 to abort base exceeds 2 hours.

12.8.6.4. PLANNED EAR #1 FUEL (item 34). Must be sufficient to meet the requirements of item 35 (REQUIRED EAR #1 FUEL) to satisfy the A/R #2 abort base fuel requirements in the event fuel is not unloaded during A/R #2.

12.8.6.5. UNIDENTIFIED EXTRA (item 36). Does not need to meet the normal requirement (not to exceed 2000 pounds), since item 26 (planned EAR #2 fuel) must be sufficient meet EAR #2 to destination and A/R #2 abort base fuel requirements in the event of no onload. If unidentified extra fuel is excessive, consideration should be given to reducing the proposed PLANNED EAR #1 fuel (item 8) and increasing the proposed A/R #2 onload, if possible.

#### 12.8.7. Section V, **EAR to DESTINATION:**

12.8.7.1. Items separated by a diagonal ( / ) in this section are applicable to both single and double inflight refueling missions. The item letter or number after to the diagonal ( / ) applies to double inflight refueling planning. Use the planned cruise profile for fuel calculations.

12.8.7.2. RESERVE (item 39). Ten percent of the Category I route from EAR #2 to destination, not to exceed 45 minutes.

12.8.7.3. UNIDENTIFIED EXTRA (item 48). This calculation assumes you receive the planned fuel onload. Subtract fuel required at EAR #2 prior to onload (item 47) from the planned fuel at EAR #2 prior to onload (item 46). This value equals the extra fuel carried or additional fuel required (if negative) at the destination. When negative, additional fuel must be, added to the ramp fuel, available from the tanker, or in some situations may require moving one or both of the air-refueling tracks.

### ***Section 12D— Inflight Fuel Management Procedures***

#### **12.9. General Inflight Fuel Management Procedures.**

12.9.1. Inflight fuel management is required for each flight over a Category I route when the flight time between the LSAF and FSAF is 4 hours or more. Use the inflight fuel management section on the AF Form 4138 or approved procedures compatible with computer flight planned fuel analysis.

**NOTE:** Inflight fuel management is highly recommended for all other flights when limited onboard fuel is available, and the route includes a segment of 4 hours or more, with marginal or no divert fields, and there may be insufficient divert bases available prior to reaching the planned destination.

12.9.2. When required, inflight fuel management procedures will begin as soon as practical after initial level and restarted after level off following an inflight refueling. Terminate inflight fuel management when the approach is initiated or at the discretion of the aircraft commander.

12.9.3. Inflight fuel analysis interval: The time interval between inflight fuel analysis entries will not exceed 1+20. Under normal conditions, 1 hour or less is the recommended time between documented

inflight fuel management reading. In the event the fuel value for Extra @ DEST, in the Inflight Fuel Management section of the AF Form 4138, drops below zero, the time interval between inflight fuel analysis entries should be reduced and will not exceed 45 minutes.

12.9.4. Fuel On Board (FOB) data required for inflight fuel analysis may be taken directly from the Totalizer or CNI-MU, MC INDX, WT+BAL page.

12.9.5. Consider a change in altitude which improves fuel consumption per distance traveled. See paragraph 5.29.4 of this instruction.

12.9.6. Prior to an ETP. If the actual fuel is below or projected to go below the minimum fuel required, plan to return to the departure base, A/R abort base, or last suitable airport; or evaluate whether sufficient fuel is available to proceed to an A/R, the first suitable airport, or destination with the required fuel reserve. Proper evaluation of the actual consumption is essential prior to approaching an inflight ETP, since negative fuel management results indicate less than the required fuel at End A/R or overhead destination. Consideration must be given to the identified extra fuel, which may be required for any off course maneuvering, anticipated icing, insufficient approach aids, succeeding legs, or other contingencies affecting fuel necessary to complete the flight.

12.9.7. EC-130J Mission Computer (MC) Profile.

12.9.7.1. The EC-130J mission computer calculates a complete climb, cruise, descent, approach and landing profile based on entered LEGS DATA and PERF CLIMB, CRUISE, and DESCENT factors. The accuracy of MC calculated leg fuel is dependent on accurate airspeed, altitude, wind, temperature, and fuel flow data entered for each leg of the route. This requires updating the appropriate data as in-flight conditions change. The MC fuel profile is more than a planning tool; so good judgment must be used when entering forecast/planned information versus actual performance and conditions. .

12.9.7.2. MC fuel data should not be considered the primary method for inflight fuel management, but rather a tool to verify the accuracy of data derived from other methods described in this chapter. During preflight and for each inflight fuel management entry, the Fuel On Board (FOB) for each remaining leg should be compared against the flight plan to verify sufficient onboard fuel to meet or exceed overhead destination and landing requirements.

12.9.7.3. Once airborne, the FOB displayed on the CNI PERF INIT WEIGHT page is calculated (not sensed) using sensed fuel flow versus time. After completing and inflight refueling, the FOB will need to be adjusted to include the fuel onload. Otherwise, only update the FOB displayed on the PERF INIT WEIGHT page to the amount indicated by the totalizer when the totalizer amount is less than the FOB calculated by the MC. The CNI will provide a FUEL QTY ERROR advisory when the PERF INIT WEIGHT FOB and totalizer readings differ by more than 2500 lbs for more than 10 minutes.

12.9.7.4. Record both the totalizer and MC calculated FOB, but normally the more conservative of the two values will be used inflight fuel management.

12.9.7.5. Reserve Fuel (RSV on PERF INIT WEIGHT) should be set to the required overhead fuel calculated during mission planning. Once airborne the taxi fuel should be set to zero. The CNI supplies a Low Calculated Fuel advisory when the calculated EXTRA fuel on the PERF INIT WEIGHT page falls below zero. Both intended destination and alternate landing fuel can be obtained from the mission computer.

12.9.7.6. Flight crews should utilize the MC profile to verify the accuracy of inflight fuel management procedures, and evaluate fuel status after extensive weather avoidance deviations or receiving mission changes and re-routes.

12.9.8. Flight Plan Changes and Diversion. When air traffic control or mission requirements dictate a change to the planned mission or route of flight, inflight fuel analysis will be required to ensure safe completion of the flight. Since it may not be practical to complete a new flight plan and fuel analysis worksheet inflight, MC fuel data may be the best method available to determine if a mission change or re-route is acceptable. Do not accept a re-route that arbitrarily depletes your reserve fuel.

12.9.8.1. If the enroute change does not affect the intended destination and is simply a re-route or direct clearance, any of several different methods for inflight fuel management may be utilized.

12.9.8.1.1. Accomplish in-flight fuel management using standard AF Form 4138 inflight fuel management procedures or use MC fuel data to predict the ACTUAL FUEL @ WP to the next point common to the re-route and original flight plan.

12.9.8.1.2. An alternate method is to accomplish normal inflight fuel management procedures except, determine the fuel remaining value (Fuel @ WP) for positions abeam the original flight plan waypoints. Use the abeam function on the INDEX/FIX INFO PAGE of the CNI-MU, and compare the Fuel @ WP (abeam) to the planned fuel information at the actual waypoint. Exercise caution when using this method, since the revised routing could significantly increase the estimated enroute time (ETE) and require more fuel than the original flight planned route.

12.9.8.2. For directed or unplanned destination diverts, CNI FROM/TO page data may be used in conjunction with the associated cruise ground speed to determine the estimated enroute time. Using the current cruise fuel flow as a conservative value, FSO should be able to determine whether the change is acceptable. Once the new route of flight has been entered into the CN-MU, verify sufficient FOB to meet overhead destination fuel requirements.

12.9.9. Prior to an Inflight Refueling inflight management is accomplished reference the EAR point, as the destination. When the unidentified extra fuel overhead an A/R Abort Base is less than 4,000, two inflight fuel management calculations will be accomplished for each fuel reading. The first will use the standard analysis procedures and the EXCESS value to monitor fuel relative to the EAR and the other using the EXCESS value and procedures relative the A/R Abort Base.

**EXCEPTION:** If the value for the planned EXCESS to the A/R Abort Base is greater than the EXCESS to the EAR then a single analysis entry is sufficient provided the EXTRA FUEL @ DEST for the EAR analysis remains a positive value.

## 12.10. Inflight Fuel Management Procedures.

12.10.1. When required, inflight fuel management will be accomplished in conjunction with the AF Form 4138 Inflight Fuel Management procedure using fuel analysis data derived manually or from an approved computer flight planning system.

12.10.1.1. When using these procedures for inflight fuel analysis, it is essential to accurately plan and fly the flight planned cruise profile. When the planned cruise profile is followed, changes to End A/R or destination ETE caused by erroneous wind information are taken into account, while deviations from flight planned altitude and airspeed are not.

12.10.1.2. When the actual cruise altitude is greater than two thousand (2,000) feet above or below the flight planned altitude or the actual TAS deviates from the planned speed by more than 10 KTAS it may be necessary to reevaluate inflight fuel management procedures.

**WARNING:** These procedures are only valid when the flight planned route and cruise profile are followed. Inflight deviations from the planned speed or altitude profile are not taken into account and may increase the fuel burn to a rate significantly higher than flight planned. If the planned cruise profile or route of flight is changed, the fuel calculations may be in error until the flight plan is corrected, the route of flight rejoins the original flight planned routing, and/or the planned cruise profile is followed.

12.10.2. ACTUAL. The ACTUAL section of the fuel analysis procedure is used to document fuel data and adjust the fuel reading forward/back to predict the fuel on board at the next/previous flight-planned waypoint. When manually fuel planned, the term next flight-planned waypoint refers to the next/previous waypoint with a calculated fuel remaining value.

12.10.2.1. TIME. Time of the fuel reading: beginning at initial level off, level off after inflight refueling, then thereafter at the time interval as outlined in paragraph 12.9.3. of this instruction.

12.10.2.2. ALTITUDE. Enter the aircraft altitude at the time of the fuel reading.

12.10.2.3. FUEL REM. Actual fuel remaining at time of reading.

12.10.2.4. FUEL FLOW. The predicted fuel flow to the next computer flight planned waypoint.

12.10.2.5. ETE TO WPT. This is the ETE from the time of the actual fuel reading to the next computer flight planned waypoint.

12.10.2.6. FUEL USED. Fuel consumed from the time of the fuel reading until over the next flight-planned waypoint. Calculate using fuel flow and the ETE TO WPT (ACTUAL).

12.10.2.7. FUEL @ WPT. Actual fuel remaining minus calculated fuel used from the time of the reading until over the next waypoint. This value will be compared to the required fuel at the waypoint.

12.10.2.8. In some instances it may be more accurate or convenient to forecast back to the last waypoint over flown and compare the FUEL @ WPT (ACTUAL), to the EXTRA FUEL @ WP (PLAN) for that position. In this situation the FUEL USED (ACTUAL) will be added to the FUEL REM (ACTUAL) to determine the FUEL @ WPT (ACTUAL).

12.10.3. PLAN. The PLAN section of the fuel analysis procedure is used to identify computer flight planned waypoint information and calculate a required minimum fuel value at the waypoint.

12.10.3.1. WAYPOINT. Enter the Waypoint number or geographic designation for the next flight-planned waypoint where the FUEL @ WPT (ACTUAL) was calculated.

12.10.3.2. ETA TO WPT. Estimated time of arrival at the waypoint.

12.10.3.3. FUEL @ WPT. The flight planned fuel calculated at the waypoint.

12.10.3.4. EXCESS. Value(s) determined during flight planning. Calculate by subtracting the fuel required overhead a destination, air refueling abort base, or at an End Air Refueling point (EAR), whichever value is applicable to the current phase of flight, from the calculated fuel quantity taken from the flight plan for the same point.

12.10.3.5. REQ FUEL. The FUEL @ WPT (PLAN) minus EXCESS. This is the fuel required at the waypoint to arrive overhead the destination, air refueling abort base, or the EAR point with the minimum allowable fuel, assuming the flight follows the planned route of flight, cruise profile, and timing.

12.10.4. EXTRA FUEL.

12.10.4.1. EXTRA FUEL @ WPT. Calculate using the FUEL @ WPT (ACTUAL) minus REQ FUEL (PLAN).

12.10.4.2. DEST ETE CORR. This correction is applied to the EXTRA FUEL @ WPT to determine the EXTRA FUEL @ DEST (Destination), air refueling abort base or End Air Refueling point. The DEST ETE CORR equals the DEST ETE DIFF multiplied times the TFF.

12.10.4.2.1. TFF. Use the TFF value applicable to the current phase of flight.

12.10.4.2.2. DEST ETE DIFF. Calculate by using the difference between the flight planned ETE from the waypoint the fuel calculation is based on to overhead the destination, air refueling abort base, or End Air Refueling point (EAR), whichever value is applicable to the current phase of flight and the latest revised ETE to the same point. The DEST ETE CORR is a positive value if the actual destination ETE is greater than and negative if less than the computer flight planned ETE.  $\text{DEST ETE DIFF} = \text{Actual ETE} - \text{Flight Plan ETE}$ .

12.10.4.3. EXTRA FUEL @ DEST. Calculate using the EXTRA FUEL @ WPT plus/minus DEST ETE CORR. This calculation is used to determine the extra fuel overhead the destination when an adjustment to the EXTRA FUEL @ WP is required for deviations from the flight planned ETE to overhead destination. This allows for determining extra destination fuel by taking into account deviations in wind or ground speed, but assumes the flight continues to follow the planned altitude and airspeed profile. If this value is negative, you will arrive at the destination / EAR point with less than the minimum required fuel.

**NOTE:** Prior to the ETP, if the EXTRA @ DEST becomes negative, plan to return to the departure base or the last suitable airfield, or in situations where the first suitable airfield is prior to the destination it may be desirable to continue to the first suitable airfield. Evaluate carefully in order to arrive over the chosen field with fuel required overhead destination.

Figure 12.1. CFPS Flight and Fuel Plan (No Inflight Refueling).

CFPS Version 3.2 FLIGHT PLAN for the C-130J  
Route: C:\route\J\_KMDTTJNR.rte

Date Flt Plan Printed: 200210171432

ROUTE DATE: 17 OCT 02		ACFT #: 1933		BASIC WT: 85000		1. FUEL BURN: 21110 (INCLUDES STTO & HOLDING)		6. INDENT EXTRA: 0								
DAFIF DATE: 3 OCT 02		ACFT TYPE: SJ		CARGO WT: 10000		2. RESERVE: +27 1.6 TFF: 3.5		7. ACTUAL FUEL: 32.0								
CALL SIGN: BONGO 33		DRAG INDEX: 0.00		RAMP INT: 32000		3. ALTERNATE: +12 0.7		8. REQ FUEL (1+2+3+4+5+6) 27.4								
FSO: J. VILA		INITIAL TEMP DEV: +0D		RAMP WT: 127000		4. APPROACH 0.0 or 0.7		9. UNIDENT EXTRA: 4.6								
PILOT: B. RIPPER		T/O GROSS WT: 126.2		5. LANDING 4.0		10. REQ O/H FUEL (3+4+5+HOLDING) 6.7										
WPT	AR/ FIR REMARKS	IDENT RTE FIX	TAC VOR	LAT LON	ELEV VAR	ALT TD	W/V DCA	MC MH TC	ZD TD	IAS TAS GS	ZT TT	ETA RETA	ATA	TDR TTR	F-FLOW FUEL-R	NOTES
1		KMDT 31/RW HARRISBURG IN		N 40 11.26 W076 44.89	308 11.4W	308M +0C	0	308 308 297	0		+00 +00			1505 05+06	31200	
2		DQO/R DUPONT	087X 114.00	N 39 40.69 W075 36.43	70 12.0W	27000M +0C	270/025 2	132 135 120	61 61	198 300 321	+17 +17			1444 04+49	3681 29453	
3		SIE SEA ISLE	095X 114.80	N 39 05.73 W074 48.02	10 12.3W	27000M +0C	270/040 5	145 150 133	51 112	198 300 328	+09 +26			1393 04+39	3676 28879	
4	KZNY	CHAMP B24 CHAMP		N 37 31.01 W071 40.97	unk 13.7W	27000M +0C	270/040 4	134 138 122	175 287	198 300 333	+32 +58			1218 04+08	3657 26959	
5		DOWNT A300 DOWNT		N 35 54.96 W070 44.49	unk 13.8W	27000M +0C	270/040 7	168 175 154	106 393	198 300 315	+20 01+18			1111 03+48	3634 25735	
6		LACKI A300 LACKI		N 33 29.30 W069 22.78	unk 13.8W	27000M +0C	270/040 7	169 175 155	160 554	198 300 315	+31 01+48			951 03+17	3612 23897	
7		HOLMA A300 HOLMA		N 31 39.02 W069 03.12	unk 13.5W	27000M +0C	270/035 7	185 192 171	111 665	198 300 303	+22 02+10			840 02+55	3590 22579	
8		SIMBA A300 SIMBA		N 26 55.39 W068 15.42	unk 12.9W	27000M +0C	270/035 7	185 192 171	286 951	198 300 303	+57 03+07			554 01+59	3559 19222	
9	TJZS	KRAFT A300 KRAFT		N 23 30.00 W067 43.00	unk 12.5W	27000M +0C	270/030 6	185 190 172	207 1158	198 300 303	+41 03+48			347 01+18	3524 16815	
10		LENNT A300 LENNT		N 21 15.93 W067 07.56	unk 12.4W	27000M +0C	270/030 6	179 184 166	138 1295	198 300 306	+27 04+15			210 +51	3501 15240	

193 SOW FORM 4138

Route: C:\route\J\_KMDTTJNR.rte

Date Flt Plan Printed: 200210171432

WPT	AR/ FIR REMARKS	IDENT RTE FIX	TAC VOR	LAT LON	ELEV VAR	ALT TD	W/V DCA	MC MH TC	ZD TD	IAS TAS GS	ZT TT	ETA RETA	ATA	TDR TTR	F-FLOW FUEL-R	NOTES
11		PLING A300 PLING		N 19 59.53 W066 47.88	unk 12.4W	27000M +0C	270/025 5	179 183 166	78 1374	198 300 305	+15 04+30			131 +35	3488 14344	
12		JAAWS A300 JAAWS		N 18 58.70 W066 32.44	unk 12.4W	27000M +0C	270/025 5	179 183 166	62 1436	198 300 305	+12 04+43			69 +23	3479 13633	
13		SJU/R SAN JUAN	087X 114.00	N 18 26.78 W065 59.37	7 12.6W	27000M +0C	270/025 3	148 151 135	45 1481	198 300 317	+08 04+51			24 +14	3473 13144	
14		NRR/T ROOSEVELT ROA	085X	N 18 14.03 W065 38.60	275 12.7W	27000M +0C	270/025 3	135 138 123	23 1504	198 300 321	+04 04+56			1 +10	3469 12890	
15		TJNR/A ROOSEVELT ROA		N 18 14.71 W065 38.61	38 12.7W	38M +0C	270/025 -5	012 007 360	1 1505		+10 05+06			0 +00	10890	

193 SOW FORM 4138

[illegible]

Figure 12.3. AF Form 4138 Manual Fuel Planning (No Inflight Refueling).

MANUAL FUEL PLANNING			TIME	FUEL
OPERATING WT. 85.0	ACFT NUMBER 1933		1. ENROUTE *	4 + 58 18.8
CARGO / PAX 10.0	ACFT TYPE SJ		2. RESERVE *	+ 27 1.6
ZERO FUEL WT. 95.0	FUEL PLAN 1 - 1		3. ALTERNATE AND MISSED APPROACH *	+ 12 0.7
RAMP FUEL 32.0	PAGE 5 - 113 / 114		4. HOLDING	2.0
RAMP WT. 127.0	DRAG 0		5. APPROACH AND LANDING	4.0
TAKEOFF WT. 126.2	TEMP DEV 0		6. IDENTIFIED EXTRA *	0.0
HIGHEST ACC FL FL300	TFF 3.5		7. TOTAL TAKEOFF ( 1+2+3+4+5+6 )	27.1
ENDURANCE ( * ) 8 + 35	DISTANCE	TIME	8. STTO	0.8
ALTERNATE # 1 ST CROIX	72	+ 12	9. ACTUAL RAMP	32.0
ALTERNATE # 2			10. REQUIRED RAMP ( 7+8 )	27.9
EXCESS FOR INFLIGHT FUEL MANAGEMENT ( NO A/R ) PLANNED FUEL O/H DEST - (12) = 5.7			11. UNIDENTIFIED EXTRA * ( 9 - 10 )	4.1
FSO SIGNATURE <i>Jake Vila</i>			12. REQUIRED OVER DEST ( 3+4+5 ) *	6.7

Figure 12.4. CFPS Flight and Fuel Plan (Single Inflight Refueling).

CFPS Verion 3.2 FLIGHT PLAN for the C-130J  
Route: C:\route\J\_KMDT8EGXJ.rte

Date Flt Plan Printed: 200210171308

ROUTE DATE: 17 OCT 02		ACFT #:		1933		BASIC WT:		85000		COMPUTED EXCESS FOR AF FORM 4138 INFLIGHT FUEL MANAGEMENT																	
DAFIF DATE: 3 OCT 02		ACFT TYPE:		SJ		CARGO WT:		10000		TAKEOFF TO EAR			TAKEOFF TO A/R ABORT			EAR TO DESTINATION											
Call SIGN: BONGGO 33		DRAG INDEX:		0.00		RAMP FUEL	INT:	35000 0		CFPS EAR FUEL: (NO ONLOAD)			20.7			CFPS O/H DIVERT: (NO ONLOAD)			18.4			CFPS O/H DEST:			12.5		
		INITIAL TEMP DEV:		+0D		RAMP WT:		130000		AF FORM 4139 ITEM 47: -			17.2			AF FORM 4139 ITEM 19: -			7.5			AF FORM 4139 ITEM 49: -			6.9		
FSO: J. VILA		PILOT:		B. RIPPER		T/O GROSS WT:		129.2		EXCESS			3.5			EXCESS			10.9			EXCESS			5.6		
WPT	AR	IDENT	RTE	TAC	LAT	ELEV	ALT	W/V	MC	2D	IAS	ZT	ETA	ATA	TDR	F-FLOW	NOTES										
	FIR	FIX	VOR	LON	VAR	TD	DCA	MH	TC	TD	TAS	GS	TT	RETA	TTR	FUEL-R											
1		KMDT 31/RW HARRISBURG IN		N 40 11.26 W076 44.89	308 11.4W	308M +0C		308 308 297	0		0		+00			3152 10+02	34200										
2		SEG/R SELINGSGROVE	041X 110.40	N 40 47.45 W076 53.04	620 11.5W	23010M +0C	260/025	002 002 350	37	N/A N/A	+11					3115 09+50	7140 32855	LEG FUEL									
3		HNK/E HANCOCK	115X 116.80	N 42 03.78 W075 18.98	2070 13.0W	27000M +0C	260/025	054 051 042	104	198 300 319	+21					3011 09+30	3719 31486	34.2 -20.7									
4		ALB ALBANY	100X 115.30	N 42 44.83 W073 48.19	275 14.3W	27000M +0C	260/025	071 069 058	79	198 300 323	+15					2933 09+15	3704 30583	13.5									
5		BGR J49 BANGOR	095X 114.80	N 44 50.51 W068 52.44	360 17.9W	27000M +0C	260/025	072 070 058	248	198 300 323	+46					2684 08+29	3676 27758										
6	CZQM	.TOPPS J581 TOPPS		N 45 20.41 W067 44.32	unk 18.6W	27000M +0C	260/025	076 074 058	57	198 300 323	+11					2628 08+18	3650 27116										
7		YFC52 J581 YFC/R261052	077X 113.00	N 45 27.38 W067 29.15	unk 18.7W	27000M +0C	260/025	075 074 057	13	198 300 323	+02					2615 08+16	3644 26972										
8		YFC J581 FREDERICTON	077X 113.00	N 45 53.69 W066 25.13	52 19.3W	27000M +0C	260/025	078 076 059	52	198 300 323	+10					2563 08+06	3639 26386										
9		YGR J581 GRINDSTONE	057X 112.00	N 47 25.82 W061 46.44	63 21.2W	27000M +0C	250/060	082 081 063	213	198 300 359	+36					2350 07+31	3619 24243										
10	CZQX	YGR/E084052 J581	057X 112.00	N 47 51.48 W060 39.57	unk 21.4W	27000M +0C	250/060	081 079 060	52	198 300 359	+09					2298 07+22	3600 23721										
11	RZIP	YJT J581 STEPHENVILLE	078X 113.10	N 48 34.95 W058 40.15	1184 22.1W	9000M +0C	250/040	083 083 062	91	N/A N/A N/A	+18					2207 07+04	1348 23003										

193 SOW SINGLE A/R FORM 4138

Route: C:\route\J\_KMDT@EGXJ.rte

Date Flt Plan Printed: 200210171554

WPT	AR	IDENT RTE	TAC	LAT	ELEV	ALT	W/V	MC	ZD	IAS	ZT	ETA	ATA	TDR	F-FLOW	NOTES
	FIR	FIX	VOR	LON	VAR	TD	DCA	MH	TD	TAS	TT	RETA		TTR	FUEL-R	
12	ARCP	YJT/R088080 STEPHENVILLE	078X 113.10	N 49 05.28 W056 48.11	unk 22.2W	9000M +0C	250/040 0	* 089 089 067	* 80 1025	* 215 245 285	+17 03+14			2127 06+47	4177 21831	
13	EAR	CYMON/W CYMON		N 49 43.00 W055 00.00	unk 22.6W	10000M +0C	250/040 -2	* 083 082 061	* 80 1105	* 200 232 271	+18 03+32			2047 06+30	3802 20708	
A/R DVT		CFPS Fuel Onload: 15000				EAR FUEL-R (NO ONLOAD) - DVT FUEL = OH DVT				EAR FUEL-R (NO ONLOAD) + PLANNED ONLOAD				ONLOAD + 15.0		DVT FUEL - 2304
		CYTT/A ST JOHNS INTL		N 47 37.12 W052 45.12	461 21.3W	20000M +0C	270/030	* 166 154	* 290 307	00+31		= EAR FUEL WITH ONLOAD		35.7	18.4	OH DVT
14	CZQX	.50 W		N 51 00.00 W050 00.00	unk 22.4W	27000M +0C	250/040 0	* 090 089 067	* 207 1312	* 198 300 340	+41 04+13			1840 05+49	3744 32711	
15		.40 W		N 53 00.00 W040 00.00	unk 20.5W	27000M +0C	270/040 -3	* 091 088 068	* 389 1702	* 198 300 337	01+09 05+22			1450 04+39	3697 28436	
16	EGGX	.30 W		N 53 00.00 W030 00.00	unk 16.4W	27000M +0C	250/040 2	* 107 109 086	* 362 2064	* 198 300 338	01+04 06+26			1088 03+35	3636 24542	LEG FUEL
17		.20 W		N 53 00.00 W020 00.00	unk 11.9W	27000M +0C	220/025 3	* 102 106 086	* 362 2426	* 198 300 317	01+09 07+35			726 02+27	3580 20449	35.7 12.5
18	EISN	.15 W		N 53 00.00 W015 00.00	unk 9.5W	27000M +0C	260/020 1	* 100 100 088	* 181 2607	* 198 300 320	+34 08+09			545 01+53	3541 18443	23.2
19		BURAK/W BURAK		N 53 00.00 W012 00.00	unk 8.3W	27000M +0C	260/020 1	* 098 099 089	* 109 2716	* 198 300 320	+20 08+29			436 01+32	3522 17245	
20		SHA SHANNON	080X 113.30	N 52 43.26 W008 53.11	130 6.8W	27000M +0C	260/020 1	* 105 107 097	* 115 2831	* 198 300 319	+22 08+51			322 01+11	3508 15986	
21		DUB V14 DUBLIN	096X 114.90	N 53 29.96 W006 18.43	200 5.9W	27000M +0C	260/020 -1	* 069 068 062	* 104 2935	* 198 300 319	+20 09+11			217 +51	3495 14843	
22	EGTT	LIFFY L975 LIFFY		N 53 28.80 W005 30.00	unk 5.5W	27000M +0C	260/020 1	* 098 099 092	* 29 2964	* 198 300 320	+05 09+16			188 +46	3487 14527	
23		WAL L975 WALLASEY	088X 114.10	N 53 23.52 W003 08.07	55 4.5W	27000M +0C	260/020 1	* 098 099 093	* 85 3049	* 198 300 319	+16 09+32			103 +30	3480 13601	

193 SOW SINGLE A/R FORM 4138

Route: C:\route\J\_KMDT@EGXJ.rte

Date Flt Plan Printed: 200210171308

WPT	AR	IDENT RTE	TAC	LAT	ELEV	ALT	W/V	MC	ZD	IAS	ZT	ETA	ATA	TDR	F-FLOW	NOTES
	FIR	FIX	VOR	LON	VAR	TD	DCA	MH	TD	TAS	TT	RETA		TTR	FUEL-R	
24		LIC B53 LICHFIELD	545.00	N 52 44.80 W001 43.17	unk 3.7W	27000M +0C	260/020 3	* 131 134 127	* 64 3113	* 198 300 313	+12 09+44			39 +17	3472 12889	
25		CTM/T COTTESMORE	070X	N 52 44.12 W000 39.05	452 3.3W	27000M +0C	260/020 1	* 094 095 091	* 39 3152	* 198 300 320	+07 09+52			0 +10	3466 12466	
26		EGXJ/A COTTESMORE		N 52 44.14 W000 38.93	461 3.3W	461M +0C	260/020 0	* 078 078 075	* 0 3152		+10 10+02			0 +00		10466

193 SOW SINGLE A/R FORM 4138

FSO		Lt Col. Jake Vila			EC-130 FLIGHT PLAN AND NAVIGATION LOG										DATE		17-Oct-02		MANUAL FUEL PLANNING		T/O FUEL: 34.2		T/O GROSS WT: 129.2																		
PILOT		Major B.D Ripper			CALL SIGN			FROM			HARRISBURG IAP, PA ( KMDT )			TO				RAF COTTESMORE, UK ( EGXJ )			PLANNED T/O TIME		2300		DRAG INDEX		0		SEGMENT FUEL EQUALS CRUISE FUEL FLOW x SEGMENT ETE												
WPT		ROUTE		TO		ALT		TAS		WIND		TC		VAR W+/-		MC		DCA		MH		ZONE DIST		TOTAL DIST		GS		ZONE TIME		TOTAL TIME		ETA RETA		ATA		CLIMB OR SEGMENT FUEL		FUEL REMAINING		A/C GROSS WT	
1		KMDT		40-11.62 N 076-45.80 W																																					
2		SEG		40-47.45 N 076-53.04 W		↗		208		260 / 25		351		+ 11		002		-7		355		36		36		207		+11		+11											
3		L / O		39-05.73 N 074-48.02 W		27.0		↓		↓		042		+ 12		054		-4		050		18		54		237		+04		+15				↗ - 1.9		32.3		127.3			
4		HNK		42-03.78 N 075-18.98 W		↓		300		↓		042		+ 13		055		-3		052		86		140		319		+16		+31											
5		ALB		42-44.83 N 073-48.19 W		↓		↓		↓		058		+ 14		072		-2		070		79		219		323		+15		+46				1+28 @		FF 3720					
6		J49 BGR		44-50.51 N 068-52.44 W		↓		↓		↓		058		+ 18		076		-2		074		248		467		↓		+46		1+32											
7		J581 TOPPS		45-20.41 N 067-44.32 W		↓		↓		↓		058		+ 18		076		-2		074		57		524		↓		+11		1+43				→ - 5.5		26.8		121.8			
8		J581 YFC 261 / 052 FIR CZQM		45-27.38 N 067-29.15 W		↓		↓		↓		057		+ 19		076		-2		074		13		537		↓		+02		1+45											
9		J581 YFC		45-53.69 N 066-25.13 W		↓		↓		↓		059		+ 19		078		-2		076		52		589		↓		+10		1+55											
10		J581 YGR		47-25.82 N 061-46.44 W		↓		↓		250 / 60		063		+ 21		084		-1		083		213		802		359		+36		2+31				1+14 @		FF 3640					
11		J581 YGR 081 / 052 FIR CZQX		47-51.48 N 060-39.57 W		↓		↓		↓		060		+ 21		081		-2		079		52		854		↓		+09		2+40											
12		J581 YJT RZIP		48-34.95 N 058-40.15 W		11.0		275		250 / 40		062		+ 22		084		0		084		91		945		315		+17		2+57				→ - 4.5		22.3		117.3			
13		YJT 088 / 080 ARCP		49-05.28 N 056-48.11 W		↓		245		↓		067		+ 22		089		-1		088		80		1025		285		+17		3+14				0+35 @		FF 3920					
14		CYMON EAR		49-43.00 N 055-00.00 W		12.0		235		↓		061		+ 23		084		-1		083		80		1104		275		+18		3+32				→ - 2.3		20.0		115.0			
		ONLOAD 15,000 #																																		+15		35.0		130.0	
		L / O				27.0		218		250 / 40		067		+ 23		090		-1		89		45		1149		244		+11		3+43				↗ -							

AF Form 4138

Figure 12.6. AF Form 4139 Fuel Plan (Single Inflight Refueling).

SPECIAL OPERATIONS C-130 INFLIGHT REFUELING WORKSHEET						NOTES ASSOCIATED WITH SPECIFIC ITEM NUMBERS			
AIRCRAFT #: 1931		(A) OPERATING WT: 95.0		(C) PLANNED ONLOAD A/R #1: 15.0		ITEM 10: ITEMS 5 + 10 TOTAL NOT TO EXCEED 0+45 HR. IF THE TOTAL EXCEEDS 0+45, THEN ADD ONLY THE AMOUNT OF TIME IN ITEM 10 NEEDED TO BRING THE TOTAL TO 0+45			
AIRCRAFT CONFIG: SJ		(B) PLANNED RAMP FUEL: 35.0		(D) PLANNED ONLOAD A/R #2: N/A					
TAKEOFF TO EAR #1			EAR #1 TO EAR #2			ITEM 18: (IF NEGATIVE) FUEL MUST BE ADDED TO THE PLANNED RAMP FUEL (B). IF GREATER THAN 4000 LBS, NO ENROUTE FUEL MANAGEMENT REQUIRED FROM T.O. TO A/R #1 ABORT BASE.  ITEM 23: NOT TO EXCEED 0+45 HR.  ITEM 28: ITEMS 23 + 28 NOT TO EXCEED 0+45 HR TOTAL. IF TOTAL EXCEEDS 0+45 HR, THEN ADD ONLY THE AMOUNT OF TIME IN ITEM 28 NEEDED TO BRING THE TOTAL TO 0+45  ITEM 36: (IF NEGATIVE) FUEL MUST BE ADDED TO THE PLANNED RAMP FUEL (B), OR A/R #1 PLANNED ONLOAD (D). IF GREATER THAN 4000 LBS, THEN NO ENROUTE FUEL MANAGEMENT REQUIRED FROM EAR #1 TO A/R #2 ABORT BASE.  ITEM 39: NOT TO EXCEED 0+45 HR.  ITEM 48: (IF NEGATIVE) FUEL MUST BE ADDED TO THE PLANNED RAMP FUEL (B), PLANNED A/R #1 ONLOAD (C), OR A/R #2 ONLOAD (D).			
T.O. GROSS WT: (A + B + 2) 129.2		FUEL PLAN, PAGE: CFPS		EAR #1 GROSS WT: (A + 8)				FUEL PLAN, PAGE:	
TEMP DEV: 0		TIME		TEMP DEV: 0				TIME	
1. ENROUTE		3+32		13.5				20. ENROUTE (EAR #1 to EAR #2)	
2. TAXI & RUNUP				0.8				21. IDENTIFIED EXTRA	
3. IDENTIFIED EXTRA				0.0				22. BURNOFF (20+21) (EAR #1 to EAR #2)	
4. BURNOFF (T.O. TO EAR #1) (1+2+3)				14.3				23. RESERVE TFF: (EAR #1 to EAR #2) *	
5. RESERVE TFF: 3.6 (T.O. TO EAR #1)		0+00		0.0				24. TOTAL (22+23)	
6. TOTAL (4+5)				14.3		25. FUEL AT EAR #2 (B-24) (NO ONLOAD)			
7. FUEL AT EAR #1 (NO ONLOAD) (B-6)				20.7		26. PLANNED EAR #2 FUEL (25+D)			
8. PLANNED EAR #1 FUEL (7+C)				35.7		EAR #2 TO A/R #2 ABORT BASE			
EAR #1 TO A/R #1 ABORT BASE			EAR A/R #2 GROSS WT: (A + 25)			FUEL PLAN, PAGE:			
EAR A/R #1 GROSS WT: (A + 7) 112.7		FUEL PLAN, PAGE: CFPS		TEMP DEV: 0		TIME			
TEMP DEV: 0		TIME		TEMP DEV: 0		TIME			
9. ENROUTE (EAR #1 TO ABORT BASE)		0+31		2.3		27. ENROUTE (EAR #2 TO ABORT BASE)			
10. RESERVE (EAR #1 TO ABORT BASE) TFF: 3.6 *		0+00		0.0		28. RESERVE (EAR #2 TO ABORT BASE) TFF: *			
11. A/R #1 ABORT ALTERNATE		0+25		1.5		29. A/R #2 ABORT ALTERNATE			
12. HOLDING				2.0		30. HOLDING			
13. APPROACH / LANDING				4.0		31. APPROACH / LANDING			
14. IDENTIFIED EXTRA				0.0		32. IDENTIFIED EXTRA			
15. FUEL REQUIRED (EAR #1 TO ABORT BASE) (9+10+11+12+13+14)				9.8		33. FUEL REQUIRED (EAR #2 TO ABORT BASE) (27+28+29+30+31+32)			
16. PLANNED RAMP FUEL (B)				35.0		34. PLANNED EAR #1 FUEL (B)			
17. REQUIRED RAMP FUEL (B+15)				24.1		35. REQUIRED EAR #1 FUEL (24+33)			
18. UNIDENTIFIED EXTRA (16-17) *				10.9		36. UNIDENTIFIED EXTRA (34-35) *			
19. REQUIRED OVERHEAD ABORT BASE (11+12+13)				7.5		37. REQUIRED OVERHEAD ABORT BASE (29+30+31)			
AF FORM 4139, 20000301 (EF-V1)				FSO SIGNATURE: Jake Vila		DATE: 17-Oct-02			
EAR TO DESTINATION			EAR GROSS WT: (A + B / A + 26) 130.7			FUEL PLAN, PAGE: CFPS			
TEMP DEV: 0		TIME		TEMP DEV: 0		TIME			
38. ENROUTE (EAR TO DESTINATION)		6+20		23.2		39. RESERVE (EAR TO DESTINATION) TFF: 3.5 *			
40. DESTINATION ALTERNATE MILDENHALL		0+15		0.9		41. HOLDING			
42. APPROACH / LANDING				4.0		43. IDENTIFIED EXTRA			
44. REQUIRED EAR TO DEST (38+39+40+41+42+43)				32.2		45. PLANNED ONLOAD (C / D)			
46. PLANNED FUEL AT EAR #2 (77+26) (PRIOR TO ONLOAD)				20.7		47. REQUIRED FUEL AT EAR (34+45) (PRIOR TO ONLOAD)			
48. UNIDENTIFIED EXTRA (46-47) *				3.5		49. REQUIRED OVERHEAD DESTINATION (40+41+42)			
				6.9					

PAGE 1 of 2 PAGES

Figure 12.7. AF Form 4138 Excess Fuel Calculation (Single Inflight Refueling).

ONE INFLIGHT REFUELING		
CALCULATING EXCESS FOR AF FORM 4138 INFLIGHT FUEL MANAGEMENT		
TAKEOFF TO EAR	TAKEOFF TO A/R ABORT	EAR TO DESTINATION
CFPS EAR FUEL: (NO ONLOAD) 20.7	CFPS O/H DIVERT: (NO ONLOAD) 18.4	CFPS O/H DEST: 12.5
AF FORM 4139 ITEM 47: - 17.2	AF FORM 4139 ITEM 19: - 7.5	AF FORM 4139 ITEM 49: - 6.9
EXCESS 3.5	EXCESS 10.9	EXCESS 5.6

Figure 12.8. AF Form 4138 Inflight Fuel Management.

INFLIGHT FUEL MANAGEMENT											
A	TIME	2317	0015	0130		0245	0345	0500	0600	0700	0800
C	ALTITUDE	27.0	27.0	27.0		27.0	27.0	27.0	27.0	29.0	29.0
T	FUEL REM	31.8	28.6	24.2		31.3	27.7	23.0	19.7	16.0	12.3
U	FUEL FLOW	3.7	3.7	3.6		3.7	3.7	3.6	3.6	3.5	3.5
A	ETE TO WPT	+ 13	+ 18	+ 03		+ 27	+ 37	+ 28	+ 39	+ 12	+ 16
L	(-) FUEL USED	0.8	1.1	0.2		1.7	2.3	1.7	2.4	0.7	1.0
	FUEL @ WPT	31.0	27.5	24.0		29.6	25.4	21.3	17.3	15.3	11.3
	MC FUEL @ WPT	31.2	27.8	24.4		30.0	25.9	21.6	17.8	15.7	11.7
P	WAYPOINT	HNK	BGR	YGR		50 W	40 W	30 W	20 W	15 W	DUB
L	ETA TO WPT	2330	0033	0133		0312	0422	0528	0639	0712	0816
A	FUEL @ WPT	31.5	27.8	24.2		32.7	28.4	24.5	20.4	18.4	14.8
N	(-) EXCESS	3.5	3.5	3.5		5.6	5.6	5.6	5.6	5.6	5.6
	REQ @ WPT	28.0	24.3	20.7		27.1	22.8	18.9	14.8	12.8	9.2
	EXTRA FUEL @ WPT	+ 3.0	+ 3.2	+ 3.3		+ 2.5	+ 2.6	+ 2.4	+ 2.5	+ 2.5	+ 2.1
	TFF	3.6	3.6						3.5	3.5	3.5
	DEST ETE DIFF	+ 05	+ 03						- 05	- 05	- 04
	(+/-) DEST ETE CORR	0.3	0.2						-0.3	-0.3	-0.3
	EXTRA FUEL @ DEST	3.3	3.4	✓		✓	✓	✓	2.2	2.2	1.8

Figure 12.9. AF Form 4139 Fuel Plan (Double Inflight Refueling).

SPECIAL OPERATIONS C-130 INFLIGHT REFUELING WORKSHEET						NOTES ASSOCIATED WITH SPECIFIC ITEM NUMBERS		
AIRCRAFT #: 1934		(A) OPERATING WT: 110.0		(C) PLANNED ONLOAD A/R #1: 20.0		ITEM 10: ITEMS 5 + 10 TOTAL NOT TO EXCEED 0+45 HR. IF THE TOTAL EXCEEDS 0+45, THEN ADD ONLY THE AMOUNT OF TIME IN ITEM 10 NEEDED TO BRING THE TOTAL TO 0+45.  ITEM 16: (F NEGATIVE) FUEL MUST BE ADDED TO THE PLANNED RAMP FUEL (B). IF GREATER THAN 4000 LBS, NO ENROUTE FUEL MANAGEMENT REQUIRED FROM T.O. TO A/R #1 ABORT BASE.  ITEM 23: NOT TO EXCEED 0+45 HR.  ITEM 28: ITEMS 23 + 28 NOT TO EXCEED 0+45 HR TOTAL. IF TOTAL EXCEEDS 0+45 HR, THEN ADD ONLY THE AMOUNT OF TIME IN ITEM 28 NEEDED TO BRING THE TOTAL TO 0+45.  ITEM 36: (F NEGATIVE) FUEL MUST BE ADDED TO THE PLANNED RAMP FUEL (B), OR A/R #1 PLANNED ONLOAD (C). IF GREATER THAN 4000 LBS, THEN NO ENROUTE FUEL MANAGEMENT REQUIRED FROM EAR #1 TO A/R #2 ABORT BASE.  ITEM 39: NOT TO EXCEED 0+45 HR.  ITEM 48: (F NEGATIVE) FUEL MUST BE ADDED TO THE PLANNED RAMP FUEL (B), PLANNED A/R #1 ONLOAD (C), OR A/R #2 ONLOAD (D).		
AIRCRAFT CONFIG: CS		(B) PLANNED RAMP FUEL: 43.0		(D) PLANNED ONLOAD A/R #2: 25.0				
TAKEOFF TO EAR #1			EAR #1 TO EAR #2					
T.O. GROSS WT: (A+B-2) 152.2		FUEL PLAN, PAGE: CFPS		EAR #1 GROSS WT: (A+B) 141.7		FUEL PLAN, PAGE: CFPS		
TEMP DEV: 0		TIME		TEMP DEV: 0		TIME		
1. ENROUTE		7+09 30.5		20. ENROUTE (EAR #1 to EAR #2)		3+24 14.3		
2. TAXI & RUNUP		0.8		21. IDENTIFIED EXTRA		0		
3. IDENTIFIED EXTRA		0.0		22. BURNOFF (20+21) (EAR #1 to EAR #2)		14.3		
4. BURNOFF (T.O. TO EAR #1) (1+2+3)		31.3		23. RESERVE TFF: 4.1 (EAR #1 to EAR #2) *		0+07 0.5		
5. RESERVE (T.O. TO EAR #1) TFF: 4.0		0+00 0.0		24. TOTAL (22+23)		14.8		
6. TOTAL (4+5)		31.3		25. FUEL AT EAR #2 (NO ONLOAD) (8-24)		16.9		
7. FUEL AT EAR #1 (NO ONLOAD) (B-6)		11.7		26. PLANNED EAR #2 FUEL (25-D)		41.9		
8. PLANNED EAR #1 FUEL (7+C)		31.7		EAR #2 TO A/R #2 ABORT BASE				
EAR #1 TO A/R #1 ABORT BASE				EAR #2 GROSS WT: (A+25) 126.9		FUEL PLAN, PAGE: CFPS		
EAR A/R #1 GROSS WT: (A+7) 121.7		FUEL PLAN, PAGE: CFPS		TEMP DEV: 0		TIME		
TEMP DEV: 0		TIME		TEMP DEV: 0		TIME		
9. ENROUTE (EAR #1 to ABORT BASE)		0+33 2.4		27. ENROUTE (EAR #2 to ABORT BASE)		1+21 5.5		
10. RESERVE (EAR #1 to ABORT BASE) TFF: 4.0 *		0+00 0.0		28. RESERVE TFF: 4.1 (EAR #2 to ABORT BASE) *		0+06 0.4		
11. A/R #1 ABORT ALTERNATE		N/R 0.0		29. A/R #2 ABORT ALTERNATE		N/R 0.0		
12. HOLDING		2.0		30. HOLDING		2.0		
13. APPROACH / LANDING		4.0		31. APPROACH / LANDING		4.0		
14. IDENTIFIED EXTRA		0.0		32. IDENTIFIED EXTRA		0.0		
15. FUEL REQUIRED (EAR #1 to ABORT BASE) (9+10+11+12+13+14)		8.4		33. FUEL REQUIRED (EAR #2 to ABORT BASE) (27+28+29+30+31+32)		11.9		
16. PLANNED RAMP FUEL (B)		43.0		34. PLANNED EAR #1 FUEL (8)		31.7		
17. REQUIRED RAMP FUEL (8+15)		39.7		35. REQUIRED EAR #1 FUEL (24+33)		26.7		
18. UNIDENTIFIED EXTRA (16-17) *		3.3		36. UNIDENTIFIED EXTRA (34-35) *		5.0		
19. REQUIRED OVERHEAD ABORT BASE (11+12+13)		6.0		37. REQUIRED OVERHEAD ABORT BASE (29+30+31)		6.0		
FSO SIGNATURE: Jake Vila				DATE: 11-Apr-02				
AF FORM 4139, 20000301 (EF-V1)				PAGE 1 of 2 PAGES				

## Chapter 13

### LOADMASTER PROCEDURES AND FORMS

#### *Section 13A— Introduction*

**13.1. General.** In addition to the duties established in applicable T.O.s and other directives, the loadmaster will comply with the procedures and duties in this regulation. The aircraft commander may assign other duties as necessary. The loadmaster will:

- 13.1.1. Coordinate loading and offloading with air terminal operations or the shipping agency. Plan loads; handle troops and passengers; supervise loading, tie-down, and offloading of cargo, baggage, and mission equipment.
- 13.1.2. Remain in the cargo/mission compartment when passengers are onboard, and provides inflight services to passengers.
- 13.1.3. Perform scanner duties during flight in high threat environments.
- 13.1.4. Perform scanner duties during airborne refueling operations.
- 13.1.5. Remain in the cargo/mission compartment for takeoffs and landing. When the passenger load requires two loadmasters, or a loadmaster and another qualified crewmember, then both personnel will remain in the cargo compartment. One will remain forward and one aft for takeoffs and landings.

#### *Section 13B— Aircraft Loadmaster Responsibilities*

##### **13.2. Preflight Duties:**

- 13.2.1. The loadmaster will normally report to the aircraft after signing in and reviewing all applicable mission requirements or as directed by the aircraft commander to begin preflight and loading duties.
- 13.2.2. EC-130J and unit assigned BAI C-130J aircraft do not routinely airlift channel cargo; however, if so tasked, contact the applicable air terminal controlling agency, or air freight/passenger service to obtain the cargo and passenger breakdown and assist in planning of proposed load. Security requirements for ammunition and weapons will be briefed to the loadmaster during the initial load briefing at the controlling agency.
  - 13.2.2.1. EC-130Js will not normally accept airlift channel cargo; however, floor loaded cargo may be transported to support AFSOC aircraft. Under no circumstances will an EC-130J be reconfigured while off station to accommodate cargo airlift.
  - 13.2.2.2. At stations where aircraft tie-down equipment is exchanged, make every effort to ensure that a one-for-one exchange occurs. If this is not possible, the loadmaster will inform the aircraft commander of lost or missing equipment and document the loss, refer to AFTO 781.
- 13.2.3. Passenger Missions. Follow the procedures and restrictions as outlined in paragraphs [6.39](#) and [13.12](#).

**13.3. EC-130J Specific Duties:**

- 13.3.1. Identify threats directed toward the aircraft and coordinate evasive maneuvers with the remainder of the flight crew and spotters.
- 13.3.2. Operate defensive equipment and direct evasive maneuvers from visual threat engagements.
  - 13.3.2.1. Configure defensive systems equipment, located in the cargo compartment, as directed by the FSO.
  - 13.3.2.2. Identify the type of anti-aircraft threats and locations for real time intelligence gathering relative to the mission and follow-on missions.
- 13.3.3. Possess a through knowledge of aircraft systems and component locations. Inform the crew of malfunctions and systems affected by battle damage. Assist during inflight emergencies and accomplish recommended corrective actions to isolate malfunctions.

**13.4. Weight and Balance.** Accomplish weight and balance for the aircraft IAW T.O. 1-1B-50, *Weight and Balance*, AFI 11-2C-130J Volume 3, Addenda A, and this instruction.

- 13.4.1. A basic handbook of weight and balance, maintained by the unit possessing the aircraft, provides supplemental weight and balance information unique to each aircraft.
  - 13.4.1.1. This supplemental handbook is in a wear-resistant binder (marked with the aircraft model and complete serial number on the cover) need not contain T.O. 1-1B-50 if a certified copy of the current DD Form 365-3, **Chart C – Basic Weight and Balance Record** provides the current basic weight, basic moment, and basic index. The binder will include the applicable T.O. 1C-130J-5, *Basic Weight Checklist and Loading Data*, AFI 11-2C-130J Volume 3, Addenda A, and sufficient copies of the DD Form 365-4 to complete the mission.
  - 13.4.1.2. The unit possessing the aircraft is responsible for providing appropriate agencies with information required to keep the weight and balance documents current and accurate.
- 13.4.2. Compute weight and balance by using the weight and balance pages available thru the CNI MU or Chart E mathematical (moments) method. Prepare DD Form 365-4 IAW T.O. 1C-130J-5 and Addenda A. Ensure that correct weights are loaded into the CNI-MU weight and balance pages and perf weight is entered on the TOLD page.

**13.5. Fuel Weight Computation.** Fuel weight computations will be accomplished using either of the procedures outlined below.

- 13.5.1. To compute fuel weight entered on the DD Form 365-4, read directly from fuel page on weight and balance section of CNI MU menu. Select the correct limiting wing fuel area using the charts in T.O. 1EC-130J(CS)-1.
- 13.5.2. Fuel may also be computed using unit Stan/Eval approved standard fuel loading tables. Moments may be computed using the constant (0.552) method.

**13.6. Cargo/Baggage Airlift.** When loading items of cargo or baggage on the ramp, ensure the latrine area remains clear and ramp egress is available.

**13.7. Border Clearance.** Customs, Immigration, and Agriculture require certain forms for border clearance. The loadmaster will ensure that required forms are contained in the aircraft mission kit prior to take-off. Distribute the forms to the crew and ensure their completion prior to landing and deliver them to the proper persons at enroute and terminating stations. Also comply with the requirements of this instruction.

**NOTE:** Ensure sufficient customs forms are available for each passenger. Forms should be provided by passenger service personnel prior to departure.

**13.8. Operational Forms for Loadmasters.** Detailed instructions on the preparation, distribution, and use of the following forms will be found in the governing regulations (where noted).

13.8.1. DD Form 2130-2, **C-130 A/B/E/H Load Plan**

13.8.2. DD Form 2131, **Passenger Manifest**

13.8.3. DD Form 1385, **Cargo Manifest** (*DOD 4500.32R*).

13.8.4. DD Form 1854, **US Customs Accompanied Baggage Declaration** (*DOD 5030.49R*).

13.8.5. CF 5129, **Crew Member's Declaration**

13.8.6. CF 6059B, **US Customs Declaration**.

13.8.7. CF 7507, **General Declaration (Outbound/Inbound)** (*AFI 24-401, 402, 403, and 404*).

### ***Section 13C— Cargo Procedures.***

#### **13.9. Responsibilities of Aircraft Cargo Loading.**

13.9.1. Normally all airfreight, fleet service, and servicing personnel are authorized to perform assigned duties in all AFSOC aircraft when escorted by an authorized individual. Airfreight personnel are responsible for selecting cargo and mail for airlift, prompt completion of cargo documentation, palletizing, and movement of cargo to and from the aircraft to meet scheduled departures. They will advise the loadmaster of destination, size, weight, and type of cargo (classified, hazardous, etc.) to permit proper positioning; coordinate traffic activities that may affect loading and offloading; and assign sufficient air freight loading personnel for cargo handling. Airfreight personnel are responsible for safe positioning of material handling equipment and cargo to and from aircraft cargo ramp or auxiliary ground loading ramps. Under supervision of the loadmaster, airfreight personnel prepare the aircraft for loading or stowing loading equipment if the aircraft is not to be reloaded, tie-down, and physically offload cargo. If cargo, aircraft equipment, or aircraft structure are damaged during loading or offloading, or if loading personnel are injured, the loadmaster will notify the AC, command post, or terminal operations officer.

13.9.2. Proper cargo documentation must accompany each load. A consolidated statement (manifest) will be delivered to the aircraft prior to departure unless one is not available due to a lack or failure of the manifest processing equipment. In this case, a cargo listing or floppy disks containing manifest information must accompany the load.

13.9.3. The loadmaster is responsible for aircraft preflight; load planning, preparation of DD Form 365-4, **Weight and Balance Clearance Form F-Transport/Tactical**, operation of aircraft equipment; supervision and direction of loading, offloading, tie down, and coordination with loading

crew supervisor for checking the cargo against manifests. The loadmaster is responsible for safe movement of cargo into and out of the aircraft.

13.9.4. The loadmaster will brief the AC on any hazardous cargo and cargo jettison capability prior to engine start.

13.9.5. Loads planned by qualified load planners will be accepted by the aircraft loadmaster and loaded aboard the aircraft as planned, unless the load or any portion of it will compromise flight safety or does not comply with aircraft T.O.s (i.e., CG out of limits), or Air Force/MAJCOM publications. If cargo is refused or rearranged for these reasons, all applicable information, to include a copy of the load plan, will be sent thru unit stan/eval channels.

13.9.6. At locations with no air terminal or traffic personnel, the shipper assumes responsibilities in paragraph [13.9.1.](#) and provides sufficient qualified personnel and material handling equipment for loading or off-loading. Loadmaster responsibilities and authority are the same as described in paragraphs [13.9.3.](#) through [13.9.5.](#)

13.9.7. The loadmasters are the on-scene experts for load planning and accepting cargo for airlift. Some loads are not specifically detailed in applicable directives and require the loadmaster to use best judgment, based on training, experience, and knowledge, to determine the best and safest method of loading the cargo. When difficulties arise, they should seek advice of other personnel (i.e., available loadmasters, squadron, group, wing, or MAJCOM Standardization personnel).

13.9.8. During contingency, and airlift missions, the loadmaster can accept DD Form 2133, **Joint Airlift Inspection Record**, as a valid pre-inspection of equipment being offered for air shipment. The use of this form, validated by two joint inspection signatures (user and transporting force), may be used in lieu of the applicable portions of the T.O. 1C-130J-9CL-1. The DD Form 2133 will not be used to document preparation of hazardous materials. This will be accomplished using the Shipper's Declaration for Dangerous Goods.

**13.10. Emergency Exits and Safety Aisles.** Maintain emergency exits and safety aisles IAW MCI 11-258, Chapter 4 (to be published as AFI 11-2C-130J, Volume 3, Addenda A) and this instruction.

13.10.1. When passengers are seated in side facing seats, the loadmaster will ensure there is sufficient space between the cargo and the seats to permit passenger leg room.

**NOTE:** All passenger hand-carried items must be of a size to fit under the seat and must not obstruct the safety aisle. Any items that do not fit under a seat or obstruct an aisleway will be stowed with checked baggage and secured for flight.

13.10.2. At least one unobstructed emergency exit is available for each 20 passengers/troops. (This does not restrict overwater flights if the three overhead escape hatches are available for egress.) Litters and seats erected across an emergency exit are not considered as an obstruction.

13.10.3. When the load consists of palletized netted cargo or is secured with straps, a 30-inch space will be maintained between the cargo and the nearest forward litter, occupied seat. When the cargo, either palletized or non-palletized, is secured with chains, the 30-inch spacing is not required.

**EXCEPTION:** Maintain 30 inch spacing on AE missions, when carrying litters.

**13.11. Air Cargo Restraint Criteria.** Restrain cargo IAW T.O. 1C-130J-9, *Cargo Loading Manual*.

**Section 13D— Passenger Procedures.**

**13.12. Passenger Missions.** AFSOC aircraft will not normally be tasked to support AMC passenger missions, nor will passengers be manifested or loaded aboard AFSOC aircraft without the prior approval of the aircraft/mission commander.

13.12.1. Prior to releasing seats on EC-130 (SJ) and unit assigned BAI C-130J aircraft, ensure terminal operations passenger handling personnel are aware that passenger comfort latrine facilities are extremely limited and of the possibility of an inflight diversion.

13.12.2. Space-available passengers will not be transported on EC-130J Commando Solo or Special Mission configured Super J aircraft.

**13.13. Passenger Procedures and Handling .** The loadmaster(s) will ensure passengers are properly manifested on the DD Form 2131. Give one copy of the manifest to the aircraft commander for filing with the flight plan and retain sufficient copies for border clearance. The loadmaster will complete anti-hijacking requirements IAW this instruction.

13.13.1. Do not allow passengers to lounge on or tamper with equipment, cargo, or baggage.

13.13.1.1. Ensure all classified equipment is covered prior to passenger boarding.

13.13.1.2. Ensure that classified equipment remains covered during the entire mission when passengers are onboard and ensure they are denied access to this equipment.

13.13.2. The loadmaster is the key figure for good passenger relations. Be aware of the doubts and fears, which may arise in the minds of passengers and anticipate their questions and actions. There are certain rules that should be observed:

13.13.2.1. Address passengers by proper titles.

13.13.2.2. Avoid arguments and controversial subjects, national or international politics, and criticism of other personnel or organizations.

13.13.2.3. Offer services or perform duties in a manner indicating a personal interest and willingness to help.

13.13.3. Comments by the loadmaster and the manner in which they are made often determine passenger attitudes about the flight. Always remember that passengers are individuals; address them collectively only when making announcements.

13.13.4. Ensure the auxiliary power unit is shut down before boarding passengers unless adequate ear protection is provided. A passenger service representative or crew member will assist passengers at the bottom of the steps, and the loadmaster will assist in seating passengers. Ensure that only adult, English-speaking passengers are seated next to emergency exits. Do not seat mothers with infants, children under 15 years old or physically challenged persons in seats adjacent to emergency exits. Make every effort to seat families together.

13.13.5. Passengers may hand-carry DOT approved infant car seats (ICSs). These seats will be secured to a seat using the seat belt. Adults will not hold infant seats during any phase of flight.

13.13.6. When children under the age of two are accepted as passengers, their sponsor must provide their own approved ICS. If the mission aircraft is equipped with aft facing "airline style seats" no fur-

ther action is required. However, if the aircraft is configured with side facing seats crews must ensure that the ICS is adequately secured. The design of the sidewall seatbelt makes it difficult to remove enough slack to secure the ICS. Crewmembers may need to reroute the seatbelt by crossing the belt, between the sidewall and the seatback webbing, routing the belt back through the webbing and through the securing point on the ICS. When removing slack from the seatbelt ensure the buckle remains on one side or the other so that it can be easily accessed for release. If in the opinion of the AC the ICS cannot be adequately secured the passenger and the car seat will not be transported on that mission.

#### 13.13.7. Enroute and Post-Flight Passenger Procedures.

13.13.7.1. Passengers may move about the cabin after reaching cruise altitude; however, judgment must be exercised on the number of passengers allowed out of their seats at any one time. Encourage passengers to remain seated with their seat belts fastened. Due to concern for their safety, passengers are not allowed to lounge or sleep on cargo or baggage.

13.13.7.2. Make frequent checks on the following:

13.13.7.2.1. Cabin temperature.

13.13.7.2.2. Passengers with small children.

13.13.7.2.3. Cleanliness of the cabin and lavatories.

13.13.7.3. Do not allow passengers to tamper with emergency equipment. Passengers will not be permitted access to checked baggage.

13.13.7.4. On long flights, particularly during hours of darkness, use all possible means to make passengers comfortable. Dim and extinguish unnecessary compartment lights.

13.13.7.5. Passengers may visit the flight deck only when approved by the AC. Use good judgment when requesting this authority.

13.13.7.6. Sponsors must accompany children under 15 at all times during the flight.

13.13.7.7. When passengers are carried, a loadmaster will be in the cargo compartment for all takeoffs and landings. When more than 40 passengers are scheduled to be carried (except during unit moves or contingencies), two loadmasters or one loadmaster and another qualified crewmember will be in the cargo compartment. Both crew members must remain in the cargo compartment, one forward and one aft for takeoffs and landings.

13.13.7.8. Assist passengers to deplane. If DVs or couriers are aboard, the loadmaster will inform the protocol or traffic representative.

**13.14. Troop Movements.** Most personnel carried aboard AFSOC aircraft are aboard to perform a specific mission. Every effort should be made to advise them of mission progress and deviations. The troop commander should be identified prior to boarding.

13.14.1. Determine if the troop commander has any special requirements prior to departure, and advise the aircraft commander of these requirements, if appropriate.

13.14.2. Determine if specific communications requirements exist and coordinate these requirements with the aircraft commander.

13.14.3. If troops require access to classified equipment during the mission, the requirement should be made known to the aircraft commander prior to the mission.

**13.15. Emergency Airlift of Personnel.** The following procedures will apply to ensure a safe, efficient loading method for the emergency airlift of personnel from areas faced with enemy siege, hostile fire, for humanitarian reasons, or when directed by the C2 agency having operational control.

13.15.1. Emergency airlift normally will be accomplished without the use of individual seats or safety belts. The number of personnel seated on the cargo compartment floor will vary depending on individual size. Ambulatory combat floor loading will not be performed on non-combat missions.

13.15.2. General Procedures:

13.15.2.1. When available, mattresses or other cushioning material may be used for seating.

13.15.2.2. Seat troops, passengers, and ambulatory patients facing forward.

13.15.2.3. Attach a tie-down strap for each row of personnel to provide forward restraint and body stability.

13.15.3. The maximum altitude for emergency airlift will not exceed FL 250.

**13.16. Passenger Weapons Handling.** Magazines or clips will not be inserted into passenger weapons since weapons are considered loaded if a magazine or clip is installed in the weapon. This applies even though the clip or magazine is empty. Store all ammunition for passenger's weapons in a centralized location for redistribution after arrival at destination.

**Figure 13.1. Format for Validation of Cargo Loading Procedures.**

<b>CARGO ON-LOAD / OFF-LOAD VALIDATION</b>
Use the following format when tasked to validate on-loading and off-loading procedures for new cargo/equipment or when encountering any cargo that may require new, special, or specific handling procedures.
<p>1. General Loading Data.</p> <p>Nomenclature of item:</p> <p>Give military or civilian name, national stock number (NSN), and/or a brief description of the item, i.e. dump truck, medical van, etc.</p> <p>Dimensions:</p> <p>Height, Width, Length in inches</p> <p>When possible include a rough drawing or picture of the unit, pointing out critical dimensions, projections, overhangs, etc.</p> <p>Gross Weight:</p> <p>Weight in pounds</p> <p>Individual Axle Weight:</p> <p>Identify starting at front axel and listing to rear</p> <p>Data Plate Weight: (if possible)</p>
2. Personnel: Identify the number and qualification of personnel required to on-load and/or off-load the cargo and their position to observe clearance, when required
3. Special equipment and material required to on-load and off-load cargo:
4. Aircraft Configuration Required:
<p>5. Preparation of Cargo for Loading:</p> <p>(EXAMPLE) - Helicopter struts, components that must be removed, etc.</p>
6. On-loading Procedures:
7. Tie Down Points:
8. Off-loading Procedures:
9. Comments:

## Chapter 14

### MISSION SYSTEMS OFFICER PROCEDURES

**14.1. General** . In addition to the duties established in applicable T.O.s and other directives, the Mission Systems Officer (MSO) will comply with the procedures and duties in this chapter. The MSO is primarily responsible for the Commando Solo mission to include planning, coordinating, and execution. In addition, the MSO is responsible for the safe operating procedures of the mission crew.

**14.2. Mission Planning** . The MSO attends premission briefings and assimilates required data and intelligence for the mission.

14.2.1. Mission Planning Equipment. The MSO will have a mission planning kit consisting of personal and professional equipment for mission planning purposes at home station or TDY. The MSO must be capable of using the Mission Support Data Package (MSDP) or other supporting software packages.

14.2.2. The MSO prepares a mission log for briefing the mission crew and performing the mission.

14.2.3. The MSO will coordinate with the FSO in analyzing the threat situation and determine the most effective operational orbit coordinates. The MSO coordinates with the flight crew on the selection of route of flight and orbit areas.

14.2.4. On missions requiring secure communications, the MSO confirms frequencies and codes and determines if any special procedures are needed to ensure optimum communications coverage.

14.2.5. The MSO may sign out and maintain control of all crypto/authentication tables for missions requiring these procedures.

**14.3. Inflight Responsibilities** . The MSO is the primary link between the mission crew and the flight crew. The MSO keeps the aircraft commander (AC) informed of any mission parameters that affect the flight crew such as trailing wire antenna deployments, frequencies in use which may interfere with instruments and radios, and deviations that may be required to accomplish the mission. The MSO will maintain situational awareness through coordination with the FSO and utilization of all available threat update equipment, and recommend necessary actions to optimize mission execution. The MSO maintains a mission log, which documents all mission parameters for use in post-mission debriefing with intelligence. The mission logs will be maintained for six months.

**14.4. Tactical Responsibilities** . The MSO will coordinate with the AC and flight crew regarding tactical considerations, both during ingress and egress, and while in the operational area. The MSO will advise the AC on mission capabilities and make recommendations on how to safely complete the mission. The MSO will manage the employment of ECS personnel to efficiently maximize the protection of the aircraft and crew while maintaining optimized mission effectiveness. The MSO will coordinate with the AC should the VTWA need to be guillotined because of the need to expedite retrograde from the operational area.

**14.5. Communication Procedures** . Prior to a flight for which secure communications are needed, the MSO will inspect, encode, and check all secure special mission devices and communications equipment. Inflight, the MSO will maintain communications with the mission control agencies and keep the crew advised of any pertinent information. After the flight, all secure devices and classified frequencies must be cleared prior to leaving the aircraft.

## Chapter 15

### ELECTRONIC COMMUNICATIONS SYSTEMS OPERATOR/TECHNICIAN PROCEDURES

**15.1. General.** In addition to other duties established in applicable directives, the electronic communications systems (ECS) operators/technicians will comply with the procedures and duties specified in this instruction. The aircraft commander and mission systems officer may assign other duties as necessary. The term ECS operator/technician may be used interchangeably in this and other publications.

**15.2. Situational Awareness and Orientation.** Situational Awareness is critical to mission success. The key to maintaining good situational awareness is to thoroughly plan and prebrief the mission before flight. During mission planning, the ECS operators/technicians will cover all elements and details of the mission to be flown.

**15.3. Control of Classified Information and Materials.** It is the responsibility of every ECS operator/technician to control the classified material they use.

15.3.1. Clear/zeroize secure devices and classified frequencies prior to leaving the aircraft.

**NOTE:** Do not discuss classified information on interphone when radio transmissions are made.

**15.4. Mission Planning.** The following are tasks ECS operators/technicians will normally perform during mission planning.

15.4.1. Mission Crew Briefing. ECS operators/technicians will attend the mission crew briefing to obtain mission profile, requirements, and objectives.

15.4.2. Analyze Intelligence Data. Analyze intelligence data to determine the order of battle while gathering general information on the target audience and threats in the area of operations.

15.4.3. The ECS operators/technicians will ensure there is program media available for the mission.

**15.5. Preflight.** The ECS operators/technicians will preflight the mission aircraft to verify the equipment needed to complete the mission is on board.

**15.6. Inflight.** ECS operators/technicians will ensure satisfactory operation of mission equipment and provide needed information as it impacts the mission log.

15.6.1. Troubleshoot malfunctioning mission equipment enroute to minimize impact on mission operations. Enter malfunction information on the AFTO Form 781.

15.6.2. Monitor emergency frequencies when directed by the MSO or pilot.

**15.7. Monitoring Mission Systems Interphone.** The ECS operators/technicians will monitor mission systems interphones on all flights, except where mission operations preclude monitoring (i.e., scanning the horizontal trailing wire antenna.)

15.7.1. The ECS operator/technician will notify the MSO prior to leaving a duty station.

15.7.2. The ECS program technician will assume the MSO's interphone duties temporarily when the MSO cannot maintain flight crew interphone coordination.

**15.8. Post Mission.** The post mission phase of the mission begins at the combat exit point. Once the aircraft has departed the working area the ECS operators/technicians will complete all appropriate checklists as directed IAW the flight manual.

## Chapter 16

### COMBAT MISSION PLANNING

#### *Section 16A— General Information*

**16.1. General.** This instruction is applicable to the EC-130J Commando Solo and Super J aircraft, along with EC-130 Super J supported missions. Any reference to the EC-130J aircraft in this instruction is applicable to the Commando Solo (CS), Super J (SJ), and Super J Supported Missions (SM) unless otherwise specified. Mission planning is normally conducted the day prior to the mission. Operations group commanders may elect to use a “Same Day Mission Plan” option. The aircrew is ultimately responsible for the accuracy of the mission materials. Unit mission planning facilities should possess essential mission planning material.

**16.2. Mission.** EC-130J supported operations may be long or short range missions with extended orbit delays planned at the aircraft operating ceiling, and may require one or multiple air refuelings. Some missions may require a combat profile, with a low altitude profile enroute to the mission orbit area. In threat areas, no specific set of en route tactics can be selected as a best profile. [Chapter 17](#) section B provides general information on the employment of the EC-130J, while sections C, D, E, and F provide more detailed information in the areas of mission orbits, ingress/egress routes, emergency egress routes, and chart preparation. The EC-130J Commando Solo aircraft is capable of conducting day/night overt or covert broadcasts on AM/FM radio, TV, HF/Shortwave, and tactical military communications frequencies simultaneously while normally loitering outside the lethal range of most threat systems located in hostile territories. Refer to AFTTP 3-1, Vol 32, *(S) Tactical Employment, EC-130J, Commando Solo (U)*, for detailed information on threat avoidance and tactics procedures for the EC-130J. The EC-130 Super J aircraft is capable of supporting a wide array of missions.

**16.3. Communications and Operations Security (COMSEC and OPSEC).** Security is vital to all operations conducted in accordance with (IAW) this chapter. The electronic environment may be hostile, with enemy ability to jam all communications radios and electronic transmission systems; to intercept and use intelligence information transmitted over nonsecure electronic systems and radios; and to pinpoint the position of the aircraft emitting any electronic transmission or signal. Consideration of OPSEC must be applied to all phases of mission planning and execution to avoid compromise of mission objectives.

**16.4. Execution Checklist.** A chronological listing of key employment/deployment events provided by the user to monitor mission progress.

**16.5. Crew Rest.** Crews may expect long crew days and austere crew rest facilities that are not conducive to normal crew rest. Additionally, multiple time zone crossings and abrupt changes of circadian rhythm increase crew fatigue. The ability of crews to get uninterrupted sleep is crucial to flight safety and ultimately mission success. Planners and supervisors must exercise extreme caution regarding crew rest. If possible, a flight surgeon should accompany the deployment as part of the staff package during contingency operations or exercises. HQ AFSOC/SG may authorize use of sedatives or stimulants through the unit or exercise flight surgeon.

## ***Section 16B— Mission and Employment Planning***

**16.6. Mission Feasibility.** Prior to conducting comprehensive mission planning, a planning staff (consisting of representatives of applicable crew positions) will determine if the mission can be completed. This must be accomplished as rapidly as possible since the mission feasibility results will determine the "go" or "no go" decision of the tasking agency. A unit developed mission planning folder should be used as a guide for this process, and include a comprehensive risk assessment.

### **16.7. Mission Planning:**

16.7.1. General. The successful execution of a mission depends in large measure upon comprehensive premission planning. Planners must thoroughly study threats, terrain, ingress and egress routes, mission orbit and inflight refueling areas, operations security (OPSEC) and communications security (COMSEC), political and cultural characteristics, climatology, and any other factors which enhance mission success. The level of coordination is dependent on available time and means of communication.

16.7.1.1. For missions requiring a long crew duty day or operations at tactical altitudes, mission planning will be completed prior to entering crew rest.

16.7.1.2. Flight planning emphasis should be placed on the environment at least 60 nautical miles either side of the intended mission orbit delay area and ingress/egress flight path (30 NM for operations at tactical altitudes) to include terrain features, lines of communications, population centers and threat areas.

16.7.1.3. In addition to aircraft and mission equipment capabilities/limitations, terrain, and threat factors; planners must honor claimed airspace limits of sovereign nations and take into account the political climate in the region. All other factors consistent, peace time contingency operations will place emphasis on respect for sovereign national boundaries.

16.7.1.4. If low altitude ingress/egress route segments are required, they should be planned and flown at the highest possible altitude that minimizes detection.

**WARNING:** Mixing of multiple coordinate datums can cause significant navigational and target errors on EC-130J missions. The consistent use of the same datum for all coordinates will greatly reduce these errors. Ensure the same datum is used to derive coordinates for the aircraft navigations systems initialization, turn points, air refueling tracks, mission orbits, and targets. Currently the emphasis is to convert all charts when possible to the WGS-84 standard.

16.7.2. Computer Flight Planning. The SOFMP software to include CFPS, PFPS, and Falcon View are currently the computer flight planning programs approved for EC-130J planning operations.

16.7.3. Mission Feasibility Study. Prior to specific tasking and detailed mission planning, a preliminary study must be done to develop mission profiles and determine the potential for mission success. Feasibility studies are usually done at the joint command level but may be delegated as low as the individual aircrew.

**16.8. Threat Analysis and Degradation.** Missions flown in or near a hostile environment should expect to encounter enemy opposition from surface-based defenses and enemy aircraft. Employment planners and mission commanders must be prepared to plan and employ tactics which minimize the effects of these threats. EC-130J missions will be planned to avoid all known threats. Crews should be thoroughly famil-

iar with unit Mission Planning Guides, Mission Planning Folders, Tactics Pamphlets, AFTTP 3-1, Vol 32, *Threat Analysis, and Risk Assessment Procedures*, respectively.

16.8.1. Threat Factors:

16.8.1.1. The adversaries' threat system employment doctrine.

16.8.1.2. Effective operating range, types of armament, and employment tactics of air intercept aircraft.

16.8.1.3. Mobility of ground and naval systems. Not only could a system be moved to intercept the proposed mission track, but traverse rates may allow continued engagement.

16.8.1.4. Accuracy of the guidance or optics. The age of the system and its low altitude capability are factors.

16.8.1.5. Range of the weapon. Actual range of the weapon is usually given as maximum effective range. The minimum range also may be a factor. Also known as lethal range.

16.8.1.6. Range of the acquisition radar. The distance or length of time that the radar will track the aircraft before it is within lethal range.

16.8.1.7. Command and Control. The authority for firing the weapon may be far removed from the weapon location. Intelligence should determine who is the firing authority and how long it would take for the weapon system to receive the firing command.

16.8.1.8. Accuracy of the weapon. The accuracy may vary with the altitude, the speed of the aircraft, and the distance the aircraft is from the weapon. Age and condition (maintenance readiness) will also be factors.

16.8.1.9. Day versus night operations. Some systems may not be manned at night. Further, light conditions may affect optics and infrared guidance.

16.8.1.10. Number of missiles and rate of fire. The number of missiles that could be fired and at what interval; the practical rate of fire for AAA and the reload time.

16.8.1.11. Weather limitations. Moisture, heat, cold, wind limitations, electrical storms, temperature inversions, and clouds could all be factors, affecting not only the weapon, but also the personnel controlling the weapon.

16.8.2. Detection Factors:

16.8.2.1. Direction Finding capability.

16.8.2.2. Passive or acoustical detection devices.

16.8.2.3. Ground or sea observation posts or networks.

16.8.2.4. LOCs, especially at points such as dams, bridges, and road intersections.

16.8.2.5. Military maneuvers and exercises, including aircraft training routes.

16.8.2.6. Boats and ships, including commercial or fishing vessels. Associated threats include visual and radar detection. Modern military vessels have sophisticated anti-aircraft detection and defense suites.

16.8.2.7. Festival, holiday, or vacation gathering places.

16.8.2.8. Satellite schedules. This has become a significant threat in both the visual and electronic spectrum.

16.8.2.9. Radar. Flights should be planned through areas that preclude radar detection, including airport approach and air route traffic control radar coverage. Modern radar has three significant vulnerabilities that should be exploited during mission planning. These are: limits on maximum range, degraded low altitude detection capabilities because of the earth's curvature (radar horizon distance (RHD)), and the masking properties of obstructions between the antenna and the target aircraft DFA.

16.8.3. Threat Analysis. After analyzing the various threat and detection factors, adjust the enemy's threat capability for the advantages obtained when flying at lower altitudes.

16.8.3.1. Obtain "cookie cutter" distance for all threats. This is the maximum effective range of a particular system. For systems that have radar detection and shoot capability, i.e., certain SAMs and AAA, two "cookie cutter" circles must be obtained: one for the maximum detection (see) range and the other for maximum lethal (kill) range. These distances can be obtained from various sources including unclassified Tactics Pamphlets. An important factor that must be evaluated is the capability of the enemy's radar to "see" you versus the ability to "shoot" you. You may be able to accept that enemy radar can "see" you, but the associated weapon cannot reach you. This decision depends upon the need for covert or clandestine operations and mission profiles.

16.8.3.2. Plot the orders of battle with the corresponding threat circles (detection and lethal ranges). Look for obvious holes in the radar coverage and plan your mission to avoid all known threats.

16.8.3.3. If no gaps appear using the "cookie cutter" distances, evaluate the situation closer by analyzing the effects of terrain masking. Is a lower altitude flight profile required? To do this, use an applicable flight planning system or the charts in the DIA Radar Handbook, volume 2 (S). Each method will give you a new threat range that is corrected for altitude, which should be less than the "cookie cutter" distance. Replot the threat capabilities using these distances to see where gaps in coverage will open up for possible routes. If no gaps appear, careful judgment must be made as to the hazard from the threat and consequences to the mission.

**16.9. Route Selection.** Select the ingress/egress routing based on the safest run-in to the mission orbit area with a low probability of detection when possible. Work backwards from the orbit area to the departure base to develop the most effective routing.

16.9.1. Turning points and intermediate checkpoints should be recognizable on radar or visually whenever possible. In selecting navigation points, consideration should be given to minimizing aircraft radar use during ingress.

16.9.2. Numerous course changes protect not only the aircraft, but also the objective area by confusing any attempt by the enemy to predict the flight path of the aircraft.

16.9.3. Plan to avoid all known threats.

16.9.4. Do not plan routes that parallel major LOCs.

16.9.5. Plan the route using terrain masking to avoid detection, if required.

16.9.6. Avoid egress along the ingress route to the maximum extent possible.

16.9.7. Timing legs should be planned for control time adjustments when the airspace is available.

16.9.8. Whenever possible, plan the leg inbound to an Air Refueling Initial Point (ARIP) or Rendezvous Initial Point (RZIP) to have the same course as the next leg inbound to the Air Refueling Control Point (ARCP).

**16.10. Altitude and Airspeed.** Available airspace, mission effectiveness, fuel economy, threats, and detection are several of the factors, which must be considered to determine the best cruise profile for a specific mission.

16.10.1. Although the best range airspeed at the cruise ceiling will provide the most economical fuel consumption rate for ingress/egress, planning the route at lower airspeeds will provide flexibility in time control when timing legs are not practical.

16.10.2. During mission orbits or delays in the operating area, the best endurance airspeed should be considered when airspeed is not restricted by aircraft equipment or mission limitations.

16.10.3. Altimeter Updating. Altimeter update points must be planned for en route portions of the mission. Sources of update include weather forecast, ground reporting stations, GPS, and crew updates. Crew updates involve the comparison of absolute altitude (radar altimeter) plus known terrain elevation to the pressure altitude when flying over a body of water or flat terrain. Obtain an updated altimeter setting periodically during extended mission orbit delay or operations under due regard flight procedures and just prior to any operations at tactical altitudes. If this is not possible, use the lowest forecast altimeter setting.

16.10.4. Operations planned at tactical altitudes may be a desirable option in some mission scenarios to avoid detection or the lethal range of a known threat.

16.10.5. During normal flight operations at tactical altitudes:

16.10.5.1. Climb to the MSA under the following circumstances (unless safety is further compromised, i.e. conflicting traffic, etc.):

16.10.5.1.1. The aircrew becomes disoriented (position known within 5 NM of the intended flight path).

16.10.5.1.2. A minor aircraft malfunction occurs which detracts from the crew performance.

16.10.5.1.3. Inadvertent weather penetration (positions known within 5 NM of the intended flight path).

16.10.5.1.4. When either pilot must leave the seat during flight operations tactical altitudes.

16.10.5.2. A further climb to ESA may be required when:

16.10.5.2.1. The aircrew becomes disoriented (positions not known within 5 NM of the intended flight path).

16.10.5.2.2. A major aircraft malfunction occurs which detracts from the crew performance.

16.10.5.2.3. Inadvertent weather penetration (positions not known within 5 NM of the intended flight path).

16.10.5.3. Resume flight at tactical altitudes after a malfunction is resolved, visual conditions are reestablished, and establishing a positive fix.

**NOTE:** Threats, terrain, weather, and mission priority are factors when considering a climb from a tactical altitude environment during contingency operations.

**16.11. Fuel Planning.** A combination of manual and computer fuel planning procedures are recommended for long range operational missions with multiple inflight refuelings, where each method complements the weaknesses of the other. The use of computer fuel planning for operational missions is highly recommended, with verification using manual fuel planning procedures, which are dependent on a series of compromises caused by numerous variations in Commando Solo and other mission profile factors. For computer fuel planning calculations, using the planning factors developed and approved by the unit Stan/Eval will result in very accurate fuel flow calculations. Manual fuel planning procedures, on the other hand, accurately track required reserves and air refueling (A/R) abort fuel data, which is difficult to incorporate into current flight planning systems like PFPS.

**16.12. Air Refueling.** A/R should be planned with the least interruption to the normal progression of the mission when possible. A/R tracks should be along planned ingress/egress routes and near orbit areas, while at the same time avoiding all known threats and high-density civilian and military air traffic areas. When unable to avoid crossing civilian airways, military corridors and operating areas, plan descents to and climb-outs from air refueling tracks prior to entering congested airspace if possible. Emission Control (EMCON) levels for inflight refueling communications and rendezvous procedures should be planned to enhance security and detection needs, but at the same time be sure to weigh the effect on safety versus mission needs.

16.12.1. When operating under due regard flight procedures, plan the A/R altitude at the correct hemispheric altitude when possible. This is contradictory to normal A/R procedures while under the control of an air traffic control agency, where the altitudes at the top and bottom of the A/R block are frequently at the correct hemispheric altitude.

16.12.2. Avoid planning air refueling rendezvous points over islands in hot/humid climates, since stationary cloud formations commonly develop over islands in the early afternoon to late evening.

16.12.3. For missed A/R planning, end A/R (EAR) points must be close enough to departure or A/R abort alternate airfields to allow for return and land with sufficient fuel reserves, or sufficient A/R abort airfields available for recovery at the EAR point in the event of a missed A/R. The further along the route the A/R can be planned from takeoff, the more usable fuel you will have available to extend the mission duration.

**16.13. Due Regard Operations.** Some EC-130J missions conducted in international airspace or over the high seas do not lend themselves to ICAO flight procedures and must be flown under due regard procedures. For flight operations flown under the Due Regard prerogative, complete a thorough study of all published military and civilian departure/arrival routes, airway structures, and military operating areas (MOA) and deconflict using route and altitude planning when possible. Reference [Flip General Planning, Chapter 7](#) (Operations and firings over the high seas), section 7-8 (Operations not conducted under ICAO procedures) and [Chapter 6](#) of this instruction for restrictions to due regard operations.

**16.14. Communications.** It must be assumed that the enemy has the capability to monitor, intrude upon, or jam all communications. The success of these missions depends directly on responsive, reliable, and secure command and control of all communications systems. If communications are required, they will be

IAW the CEOI and execution checklists. All communications will be brief, encoded, or secure when possible and transmitted via the most applicable and appropriate means.

### ***Section 16C—Mission Orbit Planning***

**16.15. General.** Many factors will influence the planning of mission orbits. Detailed mission orbit planning will be a joint effort between the FSO and MSO/AMS, using all available inputs from tasking agencies, tasking orders, intelligence, tactics, mission specialists, the foreign clearance guide and all other available sources.

**16.16. Mission Planning.** Mission orbit planning is a compromise between the effective range of aircraft mission equipment, available airspace for the operation, and respect for the claimed airspace of sovereign nations.

**16.17. Altitude and Airspeed.** The most effective flight profile is to plan the mission orbit at the aircraft cruise ceiling and best endurance airspeed when not restricted by aircraft equipment or mission limitations. For long mission delays this may require step climbing approximately 1,000 ft in altitude for each hour on station. For extended operations by multiple aircraft in a single operations area, consider planning the initial and post A/R mission orbit entry at lower altitude, with a step climb profile to exit the area at the higher altitude. Although this profile will require an altitude block for mission operations, it will increase mission effectiveness, aid in air traffic separation, and prove to be the most fuel-efficient flight profile for most missions.

16.17.1. When Commando Solo missions require vertical wire antenna operations, the airspeed will be restricted by equipment limitations, and a 1,000-foot block altitude may be required.

16.17.2. While on station, some Senior Hunter supported missions may require operating at best range airspeed.

16.17.3. During contingencies at standard orbit airspeeds, the use of 10-20 percent flaps may be considered to reduce the aircraft nose up attitude thereby providing for improved equipment operations, fuel economy, and crew comfort. However, the added complexity to a retrograde situation should also be considered. This decision will normally be made by the Mission Commander and covered in the Tactical Operating Procedures (TOP) for the specific contingency involved.

**16.18. Fuel Planning.** When mission orbit delays are planned with a step climb, include the profile in the computer flight plan by entering a delay line every one or two hours at the appropriate altitude. This will increase the accuracy of the fuel plan and allow the crew to easily monitor the fuel inflight using the additional fuel data. When manually fuel planning, consider using constant altitude fuel charts at the average altitude of a step climb profile since published fuel planning step climb profiles are not compatible with the EC-130J. This is due to excessive weight and inability of the aircraft to follow the normal step climb profile.

**16.19. Air Refueling.** Due to limited airspace along the Forward Edge of the Battle Area (FEBA), air refuelings just prior to, mid way through, or after a mission orbit may take place in an anchor refueling area. Hazards associated with A/R near the FEBA or in an anchor include high density air traffic, descending through other aircraft operating areas, and descending into an A/R with limited airspace or

multiple A/R activities. When possible, plan descents from mission orbits to be level at the A/R rendezvous altitude prior entering the air refueling airspace.

**16.20. Chart Preparation.** Mission orbits and operating areas should be plotted on Operational Navigation Chart (ONC) or larger scale charts when appropriate. The chart should include all mission orbits. Orbits should depict the radius of turn when operating in or near an area of limited airspace, airspace of other operations, multi-use entry and exit routes, or the claimed airspace limits of politically sensitive countries near the area of operation. As a minimum, mission orbit data blocks should include the orbit name and block altitude. Also consider plotting the following additional information for mission orbit areas:

16.20.1. Annotate Radar Warning Receiver threat symbology for theater threats, as briefed by Intel. This may affect the security classification of the chart.

16.20.2. Emergency Escape Route data to include EEP, reference headings, ESA, and MSAs.

16.20.3. A/R tracks with data blocks, for A/R tracks and anchor areas near the mission orbit.

16.20.4. Operating areas, mission orbits, and known routes (with altitudes) for other aircraft near the mission orbit.

16.20.5. Civilian arrival/departure routes, airway structures, and airspace boundaries such as Class B airspace.

### ***Section 16D—Ingress/Egress Planning***

**16.21. General.** EC-130J ingress/egress planning should be a joint effort between the flight crew, tactics, and intelligence using all available inputs from tasking agencies, tasking orders, intelligence, tactics, mission specialists, the foreign clearance guide (FCG) and all other available sources.

**16.22. Mission Planning.** Mission orbit ingress and egress planning should be planned to avoid all known threats and respect claimed airspace of sovereign nations. When mission requirements dictate, a high/low or even a low altitude profile may be required to avoid detection inbound to the mission operating area.

**16.23. Altitude and Airspeed.** Attempt to plan mission ingress/egress routes at best range cruise altitude except when employing threat/detection avoidance techniques or utilizing preplanned corridors. Plan all ingress/egress routes at the best range true airspeed (TAS) unless time control, air traffic deconfliction or other factors require other speeds. Mission planning at greater than best range TAS should not be considered a standard practice. Long range mission profiles may require en route air refueling followed by an en route step climb profile of approximately 2,000 ft in altitude for each two hour en route following the initial climb after air refueling, due to the extreme weight of the EC-130J aircraft. When threat/detection is a concern during ingress, lower altitudes may be required; but the benefits of higher, more fuel efficient altitudes versus the lower probability of detection at lower ingress altitudes must be weighed to determine the best profile for the situation. When missions must be planned at tactical altitudes, never flight plan at altitudes lower than are absolutely necessary to meet the mission objectives.

**16.24. Time Control Procedures.** Timing triangles and speed control are the two methods of time control for the EC-130J. Due to the limited performance of the aircraft, mission plans utilizing speed adjust-

ments for the primary method of time control should be flight planned at 10 to 15 KTAS less than the best range cruise TAS. When timing triangles are used, attempt to incorporate them near the point requiring time control, where fewer situations will arise to affect the ETA after making the adjustment.

**16.25. Fuel Planning.** Accurate fuel planning can be accomplished using approved computer flight planning aids when the flight profile includes accurate altitude and airspeed inputs. If a step climb is planned, entering a 2,000 ft climb entry every 2 hours will show a dramatic increase in the aircraft fuel range. As with mission orbit fuel planning, this will increase the accuracy of the ingress/egress fuel plan and allow the crew to easily monitor the fuel status inflight.

**16.26. Air Refueling.** A/R tracks associated with ingress/egress routes are usually oriented in the same direction as the planned route. The rendezvous will normally be accomplished using standard en route or point parallel procedures. When the EC-130J requires multiple ingress A/Rs by the same tanker, climbs to cruise altitudes between the A/Rs may cause a rejoin problem at the second rendezvous due to the poor climb performance and slow climb speed of the aircraft. Consider cruising at the A/R altitude between refueling tracks, or perform a point parallel rendezvous for the second A/R when a single tanker performs multiple refuelings.

**16.27. Chart Preparation.** Ingress/egress routes should be plotted on Jet Navigation Chart (JNC) or larger scale charts when available. Charts should be sufficient to cover ingress/egress routing, alternate airfields, unexpected changes in routing, weather avoidance, and allow additional coverage to provide an overview of threat information and terrain features which may have an impact on mission accomplishment. When separate large-scale mission orbit charts are constructed, the ingress/egress chart may terminate at orbit entry/exit points. When strip or multiple charts are used, allow sufficient overlap in coverage and label all navigation points to avoid confusion. Also consider plotting the following additional information for ingress/egress routes:

- 16.27.1. Verify claimed airspace limits of all sovereign nations within 200 NM of the route.
- 16.27.2. Planned orbit entry and exit points.
- 16.27.3. Emergency Escape Route data to include the EEPs, reference headings, ESA, and MSAs.
- 16.27.4. Other A/R tracks along the intended route for emergencies and weather deviations.
- 16.27.5. Mission orbit areas, special routes, and altitudes of other aircraft near the ingress/egress route.
- 16.27.6. Civilian departure/arrival routes, airway structures, and airspace boundaries such as Class B airspace.

### ***Section 16E—Emergency Egress Planning***

**16.28. Mission Preparation.** Emergency egress planning should be kept simple for most EC-130J missions. In the event of a mission orbit retrograde or forced egress as a result of an unexpected threat, survival of the aircraft will improve if the plan is kept simple and easy to execute. Emergency egress route planning should be a consideration during the initial ingress/egress and mission orbit planning, and not be just an afterthought. Consider using one of the normal egress route navigation checkpoints as a common

EEP. This point should be out of the range of all air and ground based threat systems and have attributes that enhance your tactics during an emergency egress.

**16.29. Route Selection.** Select the emergency egress route for the safest retrograde from the mission orbit area. To choose the best course, work backwards from a common EEP along the planned egress route to one or several locations in the orbit area.

16.29.1. Navigation points should be recognizable visually or by radar whenever possible. In selecting navigation points for the emergency egress route, consideration should be given to minimizing aircraft radar use.

16.29.2. Turns should not be made into significantly higher terrain or other hazards.

16.29.3. Numerous course changes not only protect the aircraft, but confuse any attempt by the enemy to predict the flight path of the aircraft.

16.29.4. Direct flight over built up areas should be avoided.

16.29.5. Do not plan emergency egress routes that parallel major LOCs.

16.29.6. If areas defended by small arms must be crossed, they should be crossed at their narrowest or least defended point.

16.29.7. Plan the route by considering the detection factors and using terrain masking when possible.

16.29.8. To the maximum extent possible, avoid egress along the mission ingress route.

16.29.9. For daylight missions, avoid flight over areas that contrast with the color scheme of the aircraft (such as water, mountain snow, or lighter colored terrain surfaces) if possible.

**16.30. Altitude.** ESA and MSAs should be calculated for the Emergency Egress Route.

**16.31. Airspeed.** In the event of an emergency egress, attempt to maintain 240 KIAS for energy management.

**16.32. Fuel Planning.** Planning additional unidentified extra fuel need not be considered in most situations, because an emergency egress would force the aircraft to depart the orbit early.

**16.33. Chart Preparation.** During detailed mission planning identify those key elements needed to safely complete an escape during a 10 to 15 minute emergency egress. Since the route will be dependent on many factors (including, the aircraft location in the orbit when a threat arises, type of threat, weather, and time of day just to name a few); plotting an actual course line for the emergency egress route to the egress point may not be desirable. Annotate reference headings, ESA, and MSAs from the mission orbit to the common EEP on the mission orbit chart. For large orbit areas, several reference headings, and MSAs may be desirable. This information will start you in the right direction and provide a margin of safety in the event a rapid descent to terrain masking altitude is desired: yet provide flexibility to continuously revise the plan as you egress. The key to your success is prior planning, and mission study.

### ***Section 16F—Chart Preparation***

**16.34. General Information.** Information required to perform the mission must be annotated on navigational charts and supplemental objective materials using standard symbols and annotations with additional guidance as specified in this section. The entire route of flight from the departure point to destination will be included on a chart. Successful completion of a mission requires complete and detailed construction of the planned route on charts of a scale appropriate to each phase of flight. Since chart scale and route length may create large charts unsuitable for the flight deck environment, it may be necessary to use small-scale charts (GNC or JNC) for long distance ingress and egress routes. Mission orbits, operating areas, and emergency egress routes will be plotted on large scale charts (ONC or TPC) when appropriate and available. All charts prepared by the FSO will allow sufficient coverage for major unplanned deviations during critical mission phases and emergency egress. For detailed chart preparation information associated with mission orbits, ingress/egress routes, and EEP, also refer to the chart preparation sub areas in [Section 16C](#), [Section 16D](#), and [Section 16E](#) of this chapter. The following general instructions apply to all mission planning:

- 16.34.1. The chart code, scale, and edition will be annotated or taped to the back of the chart (if stripped). The current Chart Updating Manual (CHUM) review date will also be annotated on the back of all charts used for missions planned at tactical altitudes.
- 16.34.2. Use dark ink, pencil, or symbol tape to portray course lines. Obstacles and other chart entries may be drawn or highlighted in any legible color.
- 16.34.3. When transitioning from one chart to another, allow sufficient route overlap.
- 16.34.4. When mission orbits are on separate charts, plot the entry/exit routing on both the ingress/egress and mission orbit charts when possible.
- 16.34.5. Plot A/R tracks with information data blocks, for all planned ingress/egress refuelings.
- 16.34.6. (Optional) Plot other usable tracks and anchor areas along the ingress/egress route and near the mission orbit for emergencies and weather deviations.
- 16.34.7. Plot operating areas and designated military routes (with altitudes) for other aircraft near the ingress/egress route or near the mission orbit.
- 16.34.8. Plot claimed territorial limits of airspace for all sovereign nations in the area of operation.
- 16.34.9. Plot civilian arrival/departure routes, airway structures, and airspace boundaries such as Class B, C, and D airspace.
- 16.34.10. For all routes planned at tactical altitudes, identify the highest obstacle within three nautical miles of the planned route centerline or deviation boundary, whichever is greater. This is the obstacle used to compute MSA for each leg.
- 16.34.11. Center symbols depicting checkpoints, objectives, and so forth on the point. Do not draw course lines through these symbols.
- 16.34.12. Draw courselines using either point-to-point or radius of turn.
- 16.34.13. If using radius of turn see **Figures 16.1 and 16.2**.
  - 16.34.13.1. True course is measured from the end of the turn to the next turnpoint.
  - 16.34.13.2. Leg distance is the distance to the next turning point including the turn radius.

**Table 16.1. Radius of Turn for 20 Degrees of Bank.**

20 DEGREE BANK TEMPLATE GUIDE (DIAMETER IN INCHES)					
SCALE	TRUE AIRSPEED				
	200	220	240	265	280
JNC 1 : 2,000,000	1/8	1/8	3/16	3/16	1/4
ONC 1 : 500,000	15/32	9/16	11/16	13/16	7/8
TPC 1 : 250,000	15/16	1 1/8	1 11/32	1 9/16	1 3/4

**Table 16.2. Radius of Turn for 30 Degrees of Bank.**

30 DEGREE BANK TEMPLATE GUIDE (DIAMETER IN INCHES)					
SCALE	TRUE AIRSPEED				
	200	220	240	265	280
JNC 1 : 2,000,000	1/16	3/32	1/8	1/8	1/8
ONC 1 : 500,000	9/32	11/32	13/32	1/2	9/16
TPC 1 : 250,000	9/16	11/16	7/8	1	1 1/8

**16.35. Annotations and Symbols.** The following annotations and symbols can be used in preparing maps, charts, and objective materials. Deviations in positioning are authorized to the extent necessary to preserve chart legibility or significant radar, visual, and relief features.

16.35.1. Turnpoint or Checkpoint. Use a circle to depict en route points where the aircraft course is altered and key en route positions such as navigation checkpoints (either radar or visual). Letter or number consecutively these points throughout the mission to facilitate easy identification.

16.35.2. Initial Point (IP). Identify the ARIP, RZIP, ARCP, and EAR points by placing a dot on the coordinate location with a square centered on the point with the sides parallel to the course line. Courselines will extend to, but not into or through the squares.

16.35.3. Threat Symbolology. Annotate Radar Warning Receiver threat symbolology for theater threats.

16.35.4. Emergency Data. Annotate Emergency Escape Route data to include EEP, reference headings, ESA, and MSAs. When multiple ESAs are used, or when strip charts are used, the ESA will be annotated on each chart segment.

16.35.5. Emergency Landing Bases. A single circle with a diagonal line is used to identify those airfields compatible with unit aircraft which may be used for an en route emergency. The number of airfields selected and the frequency of occurrence along the mission route are at the discretion of the mission planner. Planners may annotate airfield identifiers and coordinates near the base.

16.35.6. Alternate Recovery Base(s). Use two concentric circles to identify those airfields compatible with unit aircraft and preferred for aborted air refuelings or recovery in case the primary recovery base is unusable because of weather, damage, or other reasons.

16.35.7. (Optional) Recovery Arrow Box. Use a horizontally divided arrow box pointing in the general direction of the alternate recovery base to provide navigational information to the alternate base. This box will depict base name, magnetic course, and distance in nautical miles from divert point to

alternate base. Estimated fuel required for the recovery may also be placed in the recovery arrow box. This symbol may be used for possible alternate routes.

16.35.8. Course Arrow Boxes. (Mandatory) For legs on training missions planned at tactical altitudes. (Optional) For Emergency Egress Routes use course arrow boxes to place essential navigation data from the mission orbit to the emergency egress point on the chart. For large mission orbit areas multiple course arrow boxes may be desirable. The box will contain the magnetic course, distance, and MSA.

16.35.9. Combat Entry and Exit Points. Annotate on the chart the point(s) at which the combat entry and exit checklists are to be completed inbound to and outbound from the orbit area, respectively.

16.35.10. Order of Battle (OB). In exercises or contingency operations, depict threat information directly on the navigational route chart. When required, use the following symbols and annotations to portray enemy OB information. Inclusion of threat capabilities may classify the chart.

16.35.10.1. Surface-to-Air Missile (SAM). The number associated with the symbol will indicate the specific type weapon system (i.e., SA-2, SA-3, SA-6, etc.). The actual site location will be the base of the symbol. Indicate the effective range of the systems at the planned mission altitude.

16.35.10.2. Anti-Aircraft Artillery (AAA). Depict AAA sites and indicate the type by a letter L, M, or H representing light, medium, or heavy weapons located at the site.

16.35.10.3. Aircraft. Portray the location of enemy fighter aircraft capable of intercepting the mission. The delta-wing symbol will indicate all-weather capable aircraft and the swept-wing symbol will indicate a VFR only capability.

16.35.11. Chart Preparation. **Figure 16.3** provides a quick reference for chart preparation. For EC-130J missions, pilot charts are only required on route segments planned at low tactical altitudes during contingency operations, exercises, and tactical training missions. Pilot charts are optional for emergency egress routes on contingency operation.

**Table 16.3. EC-130J Chart Preparation Guide.**

	FSO	PILOT
NAME and DATE	M	M
ORDER of BATTLE	M	O
CHECKPOINTS	M	M
COURSE LINES	M	M
AIR REFUELING TRACK	M	M
MISSION ORBIT/OPERATING AREA	M	M
EMERGENCY EGRESS ROUTE DATA	E, T	O
ESA	E, T	T
MSAs	E, T	T
HIGH OBSTRUCTIONS	E, T	T
DISTANCE or TIME MARKS	T	O
EMERGENCY LANDING BASES	M	O
COMBAT ENTRY or EXIT POINT	M	O
CHART CODE, SCALE, and EDITION	M	M
CURRENT CHUM REVIEW DATE	T	T
DEVIATION LINES	M	O
ALTERNATE RECOVERY BASES	M	O
ROUTE WIDTH	O	O
ALR-56 M THREAT SYMBOLOGY	O	O

M - Mandatory, O - Optional, T - Mandatory at Tactical altitudes only, E - Mandatory for Emergency Egress Route planning

**NOTE:** Classify charts depending on information sources and methods used to obtain this data (required only if classification is Confidential or higher).

### 16.36. Special Chart Requirements for Tactics Training Flights:

16.36.1. Normally, the pilot and copilot will each have a properly annotated chart for the route of flight on all training route segments flown at tactical altitudes. A single chart may be shared providing both the pilot and copilot participate in premission route analysis and chart preparation. Color copies of charts are acceptable for use by all crew positions, but only when of high quality and approved by the unit tactic shop.

16.36.2. Distance Marks. For all training flights at tactical altitude, distance remaining marks to the next checkpoints along the course line are optional. The increment used between marks is at the option of the user.

16.36.3. Time Marks. Indicate time elapsed from the last checkpoint is at the option of the user.

16.36.4. Route Width. For all training missions, the route width parameter will be drawn on both sides of course centerline, if specified.

16.36.5. Course Arrow or Data Boxes. Use course arrow or data boxes to place essential navigation data on the route charts for each leg. Where the leg is split between two strip charts, use the course arrow or data box on both charts. The box will contain the magnetic course, distance, and MSA. Distance is optional on pilot charts.

## Chapter 17

### EC-130J EMPLOYMENT

#### 17.1. Emergency Egress Procedures

##### 17.1.1. Course Maneuvering.

17.1.1.1. The aircrew must carefully monitor the intended flight path of the aircraft and advise the crew of terrain features, obstacles, and upcoming ridgelines or contours. Both visual and electronic capabilities must be closely coordinated to ensure adequate terrain clearance. The FSO will continually keep the pilots apprised of flight progress and anticipated terrain elevations, obstructions, climb points, and descent points. The pilot uses this terrain elevation information in conjunction with the radar and barometric altimeters to assist in ensuring visual separation from terrain and determining the appropriate flying altitude.

17.1.1.2. Hilly and Mountainous Terrain. In areas of rugged terrain, missions should be planned to fly no lower than necessary to avoid threat detection or engagement. At times, the threat envelope may require flights below the height of obstacles near the desired flight path. The ability to perform within this envelope requires frequent and regular practice in a simulated threat environment. The ability to see ahead of the aircraft both visually and electronically may be reduced by mountain shadows and ridgeline masking. Caution must be exercised not to exceed the aircraft capability to climb above or circumnavigate high terrain.

17.1.2. Energy Management. Carefully consider performance data and energy management when planning operations at tactical altitudes, especially in mountainous terrain at heavy gross weights or with less than full engine capability. Failure to manage energy levels may cause a stall. Slips and skids will dissipate energy quickly. Uncoordinated flight should be avoided at all times since it increases airframe structural loading, reduces stall margins, and may cause an abrupt departure from controlled flight.

##### 17.1.3. Threat Maneuvers:

17.1.3.1. Evasive Maneuvers. Effective threat reaction maneuvers require clear, concise, and timely communication between crewmembers. See AFTTP 3-1, Vol 32 for detailed procedures.

**WARNING:** Practicing defensive threat maneuvers does not constitute authority to deviate from limitations in T.O. 1EC-130J(CS)-1 and other applicable publications.

17.1.3.2. Threat Maneuvering. There are many tactics available to enhance threat survivability; defensive maneuvering is just one of these. The best situation occurs when the ALR-56M gives advance warning and a deviation around the threat is all that is required. As the immediacy of the threat increases, more maneuvering may be required. Maneuvering abruptly or at high "G" loads or high bank angles should be done only when the threat is in sight and no other course of action is available.

#### 17.2. Tactical Arrivals.

17.2.1. Low Altitude Arrivals (**Figure 17.1.**). These approaches are used primarily when low altitude ingress is necessary, e.g. avoidance of early warning radar coverage or radar-guided SAMs near the

airfield. All maneuvering is done at low altitude. These approaches can be entered from any direction at enroute altitude and airspeed.

17.2.1.1. Straight-In. This approach appears the simplest, but may be the most difficult to execute consistently. The lack of turns means the energy dissipation problem is one dimensional, making the timing of slowdown critical. The key to a successful approach is timing slowdown to obtain the proper configuration. Approximately 3 NMs are required to slow from 200 KIAS to threshold speed. From 250 KIAS, plan on 4.5 to 5 NMs. Tail winds or increased gross weights require an even earlier slowdown. This approach may be varied by using an angling final, a dog leg, or an entry to base using the same basic techniques.

17.2.1.2. Curvilinear Approach (Random Shallow). The random shallow approach is a low altitude (250 to 500 ft), high speed, VMC maneuver. It is designed as an alternate method to approach an airfield when the primary threat is from radar-guided weapons or large caliber AAA.

17.2.1.2.1. For a straight-in (**Figure 17.1.**), a level slowdown from 250 KIAS to 120 KIAS takes approximately 4.5 NM; from 200 KIAS to 120 KIAS, it takes approximately 3.0 NM. These distances assume the aircrew configures "on airspeed to landing configuration" and allows approximately 0.5 miles at threshold airspeed. This approach appears at first glance to be the easiest but may in practice be the most difficult to execute consistently. The keys to a successful approach are initiating it at the correct time and getting configured on speed. Entry airspeed is critical. Since energy is proportional to the square of velocity, a small increase in entry airspeed can make the difference between a landing and a go around. It will take at least 3 NM to slow from 220 KIAS. From 250 KIAS, plan on 4.5 to 5 NM.

17.2.1.2.2. The teardrop approach variation. The teardrop is very similar to a circling approach to the opposing runway; the primary difference is that the random shallow is entered at enroute airspeed rather than fully configured with energy dissipating throughout the approach. Also, a 300-ft pattern altitude is somewhat lower than most circling approaches. Start slowing down about 1 NM from the approach end, with 30 degrees displacement from the runway axis. Turn base when the aircraft is even with the landing threshold.

17.2.1.2.3. The abeam approach variation. The abeam approach (**Figure 17.1.**) offers flexibility and keeps the aircraft as close to the field as any of the others. Approach from abeam the runway sets the aircrew up for landing in either direction and allows reconnaissance of the field as it is flown over. The key parameters are field crossing at 220 KIAS, initiate base turn at not more than 150 KIAS, flaps set to 50 percent, and landing gear in transit. If the pattern is entered with more than 220 KIAS, a downwind extension is likely.

17.2.1.2.4. The spiral approach variation. A variation to the abeam approach is the spiral approach. The spiral approach allows pattern entry at maximum airspeed but requires planning to ensure entry is within the required parameters. The pattern is a continuous energy decay maneuver, and each of the previous patterns is included in the spiral. The pattern allows a depletion of energy and the ability to land in the absolute minimum time. The key parameters for this approach are offsetting the aircraft 1 NM abeam the touchdown zone at 250 KIAS, crossing the runway at 90 degrees and 220 KIAS, and 150 KIAS with flaps 50 percent and gear in transit before starting the base turn.

17.2.2. High Altitude Approaches (**Figure 17.2.**). These approaches are used primarily when a high or medium altitude ingress is necessary (e.g. small arms environment and a permissive high or

medium altitude threat environment exists), thus allowing some reconnaissance of the field as you fly over. Initial altitude, airspeed, and heading are based on the threat. These maneuvers may be flown on continuation training and operational missions with passengers aboard.

17.2.2.1. Overhead. Break as the tactical situation permits with approximately a 45-degree angle of bank and retard the power to flight idle after the bank is established. Make a level turn to downwind with power reapplied as necessary to maintain 150 KIAS. Maintain 140 KIAS (or approach speed if higher) until wings level on final.

17.2.2.2. Random Steep. The random steep approach ([Figure 17.2.](#)) is a high altitude maneuver, conducted in VMC. It is designed as an alternate method to approach an airfield when small arms are the primary threat and the field perimeter security is limited (usually 1 to 3 miles radius) or when terrain does not permit a normal traffic pattern.

17.2.2.2.1. Plan slowdown for configuration approximately 4 miles from the break. Remember to use actual ground speed and drift at altitude.

17.2.2.2.2. Prior to the break, select prominent ground features to aid in staying within the "protected" airspace when the runway is not in sight. Additionally, get the picture of altitude versus runway length. Remember, a 6,000 ft strip at 10,000 ft AGL could look the same as a 3,000 ft strip at 5,000 ft AGL.

17.2.2.2.3. Review the low key or final base turn mean sea level MSL altitude. As a technique, add field elevation plus 2,000 ft.

17.2.2.2.4. Review flight characteristics and Dash 1 limitations.

17.2.2.2.5. Wings level descent at 140 KIAS is about 2,500 fpm.

17.2.2.2.6. Configured, at 140 KIAS, 45 degrees of bank, the turn radius is charted at 1,900 ft, which means that the aircraft should be no farther from the runway centerline than 3,800 ft (.625 NM). In addition, the aircraft is turning at a rate of 7.5 degrees per second which means that a 180-degree turn will be completed in 22 seconds. During that interval, the aircraft will descend at least 1,650 ft. See [Figure 17.2.](#)

17.2.2.2.7. Turn radius for 30 degrees of bank is about 3,200 ft with a rate of turn of approximately 4.5 degrees per second. A 360-degree turn will lose approximately 3,700 ft (90 seconds at 2,500 fpm).

17.2.2.2.8. Plan roll out on final between 0.5 and 1 mile at approximately 300 to 600 ft AGL. This will provide a comfortable glide path.

17.2.2.3. Selection of maneuver. The desired outcome of the random approach is to place the aircraft on final (never less than 300 ft and 0.25 miles from the runway) wings level, above threshold speed so that a safe landing may be executed. The most common type of approaches include the following.

Figure 17.1. Low Altitude Approaches.

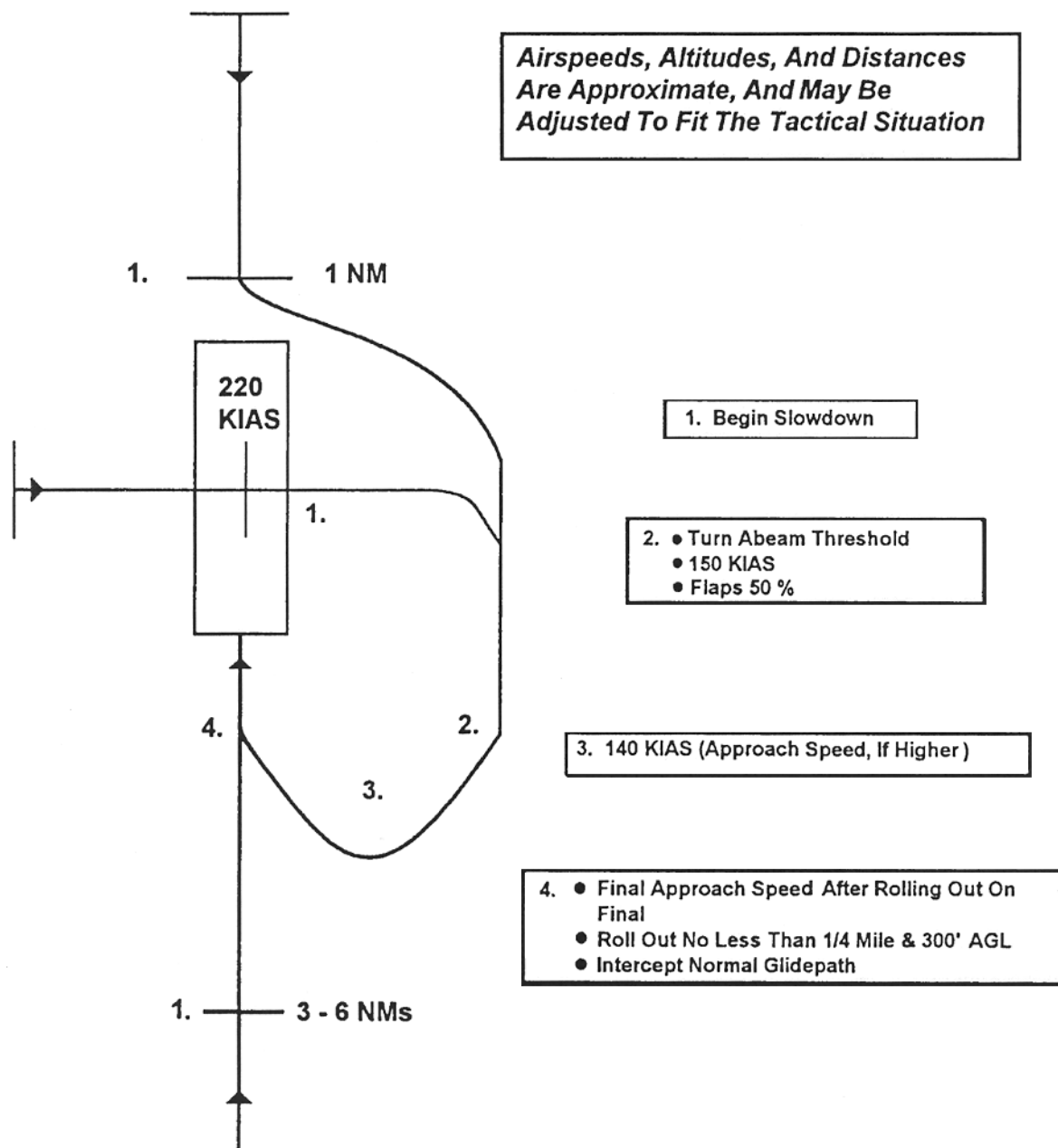
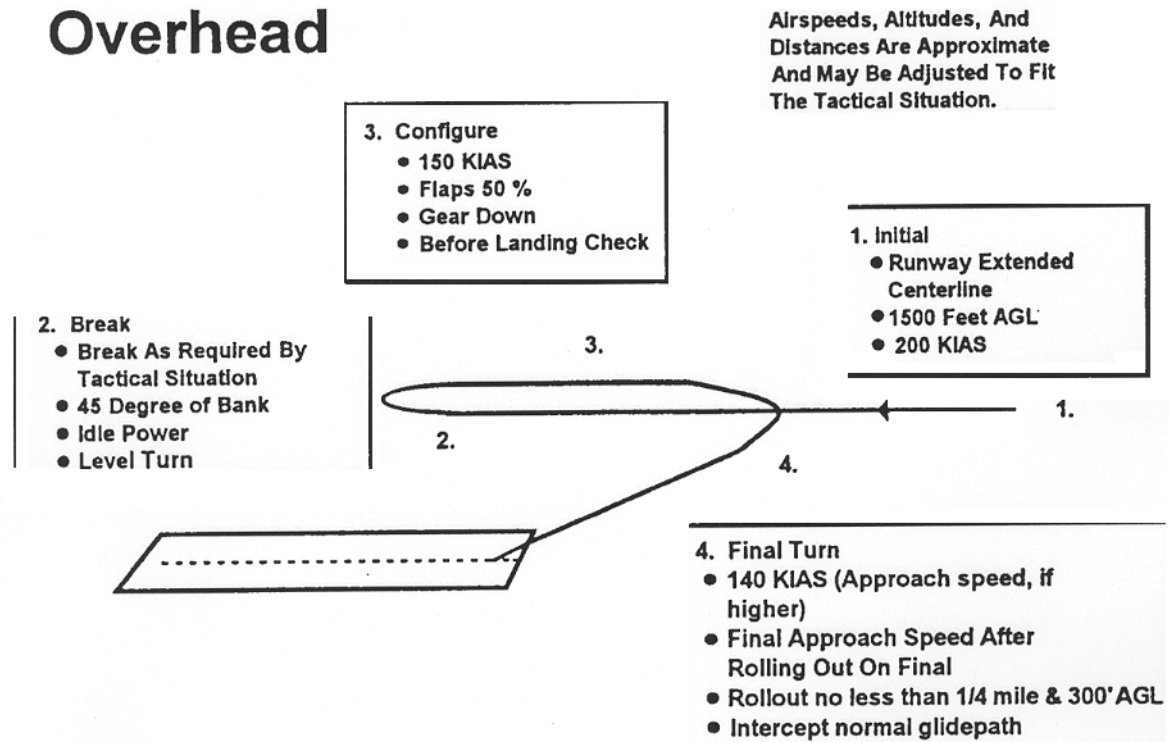


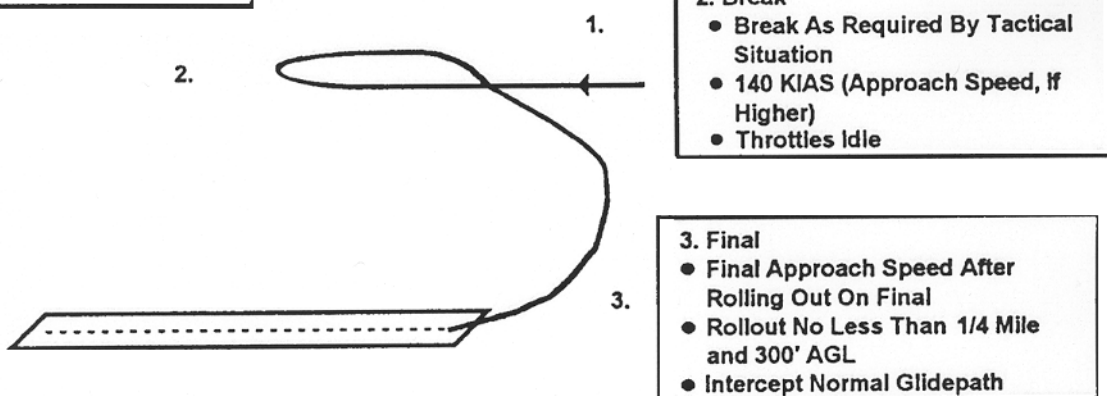
Figure 17.2. High Altitude Approaches.

## Overhead



## Random Steep

Airspeeds, Altitudes, And Distances Are Approximate And May Be Adjusted To Fit The Tactical Situation.



17.2.2.3.1. A modified 360-degree turn initiated at 4,500 ft AGL and 140 KIAS.

17.2.2.3.2. A 270-degree turn to base and 140 KIAS.

17.2.2.3.3. An opposite direction approach initiated at 3,500 ft AGL and 140 KIAS.

### **17.3. Tactical Departures.**

17.3.1. Low Altitude Departure. This departure is used when a low altitude escape is necessary, e.g. avoidance of early warning radar coverage or radar-guided SAMs. Accelerate to enroute airspeed while climbing to enroute altitude and turn to departure heading.

17.3.2. High Altitude Departure. This departure is used when a high or medium altitude escape is necessary, e.g. small arms environment and a permissive high or medium altitude threat environment exists. Fly a climbing spiral at 140 KIAS or 50 percent flap approach speed whichever is higher. Upon reaching a safe altitude, retract the flaps, accelerate, and continue climb at charted climb speeds. Actual time to climb will increase proportionally with bank angle. Therefore, use the minimum bank angle required to remain within the confines of the field boundary speed with flaps 50 percent.

**17.4. Crew Duties.** All crewmembers will perform duties as outlined in T.O. 1EC-130J(CS)-1. For flight at tactical altitudes, individual crew duties should be accomplished using the following as a guide.

17.4.1. Pilot: 100% flying the aircraft.

17.4.2. Copilot: 80% terrain clearance, 20% navigation, communications, and threats.

17.4.3. FSO: 80% navigation and threats, 20% terrain clearance.

17.4.4. Loadmaster: 80% terrain clearance and threats, 20% aircraft systems.

## Chapter 18

### SPECIAL OPERATIONS AIR REFUELING

**18.1. General.** T.O. 1-1C-1, *Basic Flight Crew Air Refueling Manual*, and LTM 1-1C-1J-29, *EC-130J Flight Crew Air Refueling Procedures with KC-135 and KC-10/KDC-10*, provide the basic guidance for refueling terminology and procedures. AFI 11-2KC-135V3, Addenda C, *KC-135, Special Operations*, provides the basic guidance for KC-135 tanker special operations refueling terminology and procedures. This provides expanded guidance for the receiver.

**18.2. Policy.** The following policies apply to all air refueling conditions regardless of emission control (EMCON) or type of rendezvous:

18.2.1. AR will only be accomplished by an AR qualified pilot, or a pilot in training under the supervision of an instructor.

18.2.1.1. Pilots in A/R training must inform the tanker prior to completing any contacts and receive an acknowledgment.

18.2.2. Use manual boom latching procedures only during fuel emergencies and contingency operations.

**NOTE:** Manual boom latching procedures are authorized for all AR operations with the KC-10A if the tanker's independent disconnect system is operational.

18.2.3. During aerial refueling missions, fuel will not be unloaded with an inoperative drain pump.

18.2.4. Do not make any HF radio transmissions or ECM emissions during AR operations.

**18.3. Altitude Reservations (ALTRV).** Whenever practical, AR operations are done on tracks or anchor areas published in the DoD FLIP. ALTRVs are used when certain missions or operational considerations require AR operations in areas not published in FLIP.

18.3.1. General:

18.3.1.1. ALTRVs may include all or parts of the route. Aircraft operating on an ALTRV must operate within the altitude, time, and end air refueling boundaries specified. Refer to FAA Special Military Operations 7610.4H, chapter 3, for ALTRV Procedures.

18.3.1.2. The mission must be airborne within a specified time period. The end of this time period is the assigned void time, which is 30 minutes after ALTRV published departure time, unless otherwise specified. This ensures separation between aircraft.

18.3.1.3. If a mission is delayed beyond the assigned void time, rescheduling normally is by 24-hour increments based on the original departure time. Exceptions require the concurrence of the central altitude reservation function (CARF) and affected air traffic control (ATC) agencies.

18.3.1.4. An ALTRV does not preclude ATC from using ALTRV airspace provided standard separation is maintained between all aircraft.

18.3.2. ALTRV Format. The approved message will contain:

18.3.2.1. Mission code designator or nickname, as required.

18.3.2.2. Aircraft call signs.

18.3.2.3. Number and type aircraft and equipment suffix (transponder code).

18.3.2.4. Point of departure and destination.

18.3.2.5. Route of flight, including altitude and departure procedures (SID, name or number).

18.3.2.5.1. Control points and times.

18.3.2.5.2. Climb, descent, and level-off points.

18.3.2.5.3. Direction of turns.

18.3.2.6. General information:

18.3.2.6.1. ETD.

18.3.2.6.2. Cell identification.

18.3.2.6.3. Interval between aircraft.

18.3.2.6.4. Assigned void time, if other than 30 minutes.

18.3.2.7. Additional information:

18.3.2.7.1. True Airspeed (TAS) for cruise, AR, and low level.

18.3.2.7.2. Call signs of supporting tankers.

18.3.2.7.3. MARSA information.

18.3.2.7.4. Air defense radar information.

18.3.2.7.5. Individual flight planning from this point information upon leaving the ALTRV.

18.3.2.7.6. Any limitations of navigational equipment or communication capability.

18.3.3. Filing:

18.3.3.1. An ALTRV approval includes a complete description of the route, including altitudes to be flown. When filing a DD Form 175 this information need not be repeated in the route of flight portion of the flight plan. When filing a DD Form 1801 this information is repeated in the route of flight portion. In either case, include the term ALTRV plus the nickname or code name of the ALTRV in the remarks section of the flight plan.

18.3.3.2. If the ALTRV is to a point short of destination, the route of flight after the ALTRV must be identified on the flight plan, even though the ALTRV approval includes a requested routing from the end of the ALTRV. To complete the route of flight, enter the nickname or code name of the ALTRV, immediately followed by the end ALTRV coordinates or fix, and the subsequent route description.

18.3.4. MARSA:

18.3.4.1. Acceptance of MARSA normally is the tanker's responsibility. Normally MARSA begins prior to the receiver reaching the rendezvous initial point (RZIP). When a rendezvous is conducted in an area that does not use normal track or anchor procedures, MARSA begins when participating aircraft enter the refueling airspace.

18.3.4.2. MARSA ends when normal separation standards are established and ATC accepts control at the end of refueling.

**18.4. Planning Factors.** Mission planners will provide the aircrews with coordinates for the entry point, RZIP, air refueling control point (ARCP), and air refueling exit point (AR Exit Pt) (see [Table 18.1](#)). When a published track is used, the entry point is always 20 NM prior to the published RZIP.

**Table 18.1. Special Operations Enroute Rendezvous Track.**

EP	RZIP (RZCT)	ARCP (ARCT)	AR Exit Pt
X.....	X.....	X.....	X
20 NM (Min)	30 NM (Min)	100 NM (Nominal)	

18.4.1. Primary control time will be the time the receiver arrives at the RZIP. This is designated the rendezvous control time (RZCT). The air refueling control time (ARCT) is the time the receiver crosses the ARCP and is used as the emergency or missed rendezvous reference time.

18.4.2. AFI 11-2KC-135, Vol 3, Addenda C, says low altitude AR restrictions do not apply to C-130 AR. Air refueling is authorized at the receiver's optimum refueling altitude, but not lower than 5,000 foot AGL.

18.4.3. Parallel tracks must be separated by at least 30 NM.

18.4.4. Elements in the stream must have at least 10 minutes separation.

18.4.5. Do not plan to refuel in areas of forecast severe turbulence or where forecast visibility at refueling altitude is less than 1 mile.

## **18.5. Special Operations Procedures:**

### **18.5.1. Lighting:**

#### **18.5.1.1. Tanker lighting:**

18.5.1.1.1. Director lights - bright.

18.5.1.1.2. Boom nozzle and boom marker lights – bright and on, respectively.

18.5.1.1.3. Under wing illumination lights - bright.

18.5.1.1.4. All lights will remain bright until the receiver is approaching the precontact position. At this time, director lights and under wing illumination lights will go to the normal refueling position and boom nozzle lights to low. Tail mounted flood light may be used in normal operation. All remaining lights will remain off, safety permitting.

#### **18.5.1.2. Receiver Lighting:**

18.5.1.2.1. Slipway lights – bright or as directed.

18.5.1.2.2. Area lights – bright or as directed.

18.5.1.2.3. IR rotating beacon/strobes - on or as directed.

18.5.1.2.4. All other lights will be off, except position lights will be on for training missions.

18.5.1.2.5. All lights will remain bright until the receiver visually acquires the tanker. At this time, slipway and area lights will be turned to normal night refueling setting. If no TALLY HO call is heard and a JUDY call is made, rotating beacon will be turned off at precontact.

18.5.2. Rendezvous Procedures. Use en route overtaking rendezvous. Both tanker and receiver will monitor primary air refueling frequency (secure) 30 minutes prior to the RZCT. Limit transmissions to those specified below unless operational requirements dictate otherwise.

18.5.2.1. Tanker:

18.5.2.1.1. At the entry point adjust airspeed to 275 KIAS and ensure external lighting is set.

18.5.2.1.2. Upon visual contact with the receiver and in a position to complete the rendezvous, the tanker boom operator will transmit TALLY HO on primary AR frequency (secure). The tanker will go to plain (non-secure) on the primary refueling frequency as the receiver approaches the precontact position.

18.5.2.1.3. If JUDY is heard, tanker will slow to AR speed and proceed down track. Tanker lead will acknowledge by turning the lower rotating beacon on then off (daylight, wing rock). During training and exercises the tanker will also transmit the numeric part of their call sign and altitude (secure). They will switch to plain (non-secure) as the receiver approaches precontact.

18.5.2.2. Receiver:

18.5.2.2.1. At the entry point, the receiver will be at the rendezvous altitude at 215 KIAS and ensure outside lighting is set. Plan to arrive at the RZIP at the RZCT.

18.5.2.2.2. Upon hearing the tanker call TALLY HO, turn off the IR rotating beacon for 10 seconds (daylight, wing rock). During training and exercises the receiver will also transmit the numeric part of their call sign and altitude on primary AR frequency (secure). Approaching precontact switch to plain (non-secure).

18.5.2.2.3. Should the tanker pass the receiver and advance to a position in front of the receiver without calling TALLY HO, and if the receiver is in position to complete the rendezvous, the receiver lead will transmit JUDY on the secure primary refueling frequency. The tanker will respond as described in [18.5.2.1.3](#).

18.5.2.2.4. The receiver then moves to the precontact position and switches to the primary refueling frequency (non-secure)

18.5.3. Control Time Adjustment:

18.5.3.1. Revised ETA prior to RZIP. If tanker is notified of a revised receiver ETA prior to crossing the RZIP, the tanker will adjust timing to arrive at the RZIP at the revised RZCT.

18.5.3.2. Revised ETA after RZIP. If notified after passing the RZIP, the tanker will delay at the ARCP or RZIP and adjust timing to make an enroute overtaking rendezvous at RZIP based on new RZCT. If the tanker is unable to make the timing at the RZIP they will rendezvous at the ARCP using the adjusted ARCT.

#### 18.5.4. Communication:

18.5.4.1. During all air refueling, the aircraft commander will designate one crewmember as primary monitor for the controlling agency radio frequency. This crewmember will be responsible for writing down any clearance issued to the tanker for the receiver aircraft. The aircraft commander will ensure the receiver and the tanker are on the same frequency.

18.5.4.2. After receiving the ATC clearance from the tanker, but prior to reading the clearance back to the tanker, the aircraft commander will compare this clearance with the one copied down by the primary monitor. If there is a difference, the receiver will query the tanker regarding the discrepancy.

18.5.5. Post Strike Rendezvous Procedures. For missions that do not have a firm RZCT / ARCT, a control time window will be established. This provides the tanker with a no earlier than (NET)/no later than (NLT) RZCT time for rendezvous. Tankers will arrive at the RZIP no later than the earliest possible control time. If there is no receiver, tanker will proceed to ARCP and hold using 2-minute legs, left-hand turns. The receiver, when en route to AR and NLT 10 minutes from the RZIP, will call the tanker (secure) with the revised RZCT. The tanker will adjust orbit to make an enroute overtaking rendezvous at the RZIP at the new control time.

#### 18.5.6. Completion of refueling:

18.5.6.1. The tanker will plan to offload the pre-briefed transfer load.

18.5.6.2. Upon transfer of the planned onload, the receiver will initiate a normal disconnect and close the UARRSI door.

18.5.6.3. If more fuel is required, leave the universal aerial refueling receptacle slipway installation (UARRSI) door open and return to the precontact position.

18.5.7. Missed Rendezvous. If the rendezvous has not been made as planned, enter a left-hand holding pattern at the ARCP and use the following procedures to accomplish the rendezvous:

##### 18.5.7.1. Receiver Procedures for Missed Rendezvous:

18.5.7.1.1. On arrival at the ARCP, the receiver will enter a left-hand holding pattern, adjusting the first pattern so as to arrive back at the ARCP on an 8-minute multiple from the ARCT, the "Rule of Eight." Example: A receiver is on time at the RZIP and arrives at the ARCP at the ARCT (0100Z) without hearing TALLY HO (secure) or seeing the tanker. The receiver enters holding, adjusting so as to arrive back at the ARCP at the ARCT plus 8 minutes (0108Z, 0116Z, etc.).

18.5.7.1.2. Maintain 1,000 feet below the refueling altitude.

18.5.7.1.3. Maintain 215 KIAS until entering holding at the ARCP, then as required.

18.5.7.1.4. Upon hearing TALLY HO (secure), proceed down track and complete the rendezvous.

18.5.7.1.5. If the receiver acquires the tanker and is in a position to complete the rendezvous, call JUDY (secure) and complete the rendezvous.

##### 18.5.7.2. Tanker Procedures for Missed Rendezvous:

18.5.7.2.1. The tanker enters a left-hand holding pattern upon arrival at the ARCP, adjusting holding to rendezvous with the receivers based on the rule of eight at the ARCP. Rendezvous equipment will not be turned on unless directed by receiver.

18.5.7.2.2. Maintain refueling altitude.

18.5.7.2.3. Maintain 275 KIAS.

18.5.7.2.4. Upon positively identifying the receiver, the tanker will maneuver for rendezvous and will call TALLY HO (secure) when ready for the receiver. If the receiver calls JUDY (secure), slow to refueling airspeed and proceed down track.

## **18.6. NVG Inflight Refueling Operations and Limitations.**

18.6.1. TBD.

18.6.2. TBD.

## **18.7. Breakaway Procedures:**

18.7.1. Tanker. The tanker will flash the receiver director lights as the primary indication for a break-away. The lower rotating beacon will be turned on as an additional signal. A radio call will be used as the last resort. When the tanker is ready to resume refueling the lower rotating beacon will be turned off.

18.7.2. Receiver. Initiate a breakaway when conditions warrant. Resume refueling when the tanker is ready.

## Chapter 19

### NIGHT VISION GOGGLES (NVG) OPERATIONS

**19.1. General.** This chapter provides guidance for EC-130J Night Vision Goggle (NVG) operations. It is applicable to all EC-130Js required to perform missions employing NVGs. Any reference to the EC-130J aircraft in this chapter is applicable to the Commando Solo (CS), Super J (SJ), and Super J Special Mission (SM) operations unless otherwise specified. See paragraph 18.6. for information on NVG inflight refueling operations and limitations.

**19.2. Mission.** Night Vision Goggles may be worn for training or operationally when conditions dictate. They will be worn to enhance threat recognition at night, improve overall night tactical effectiveness, and as an aid to night aerial refueling operations.

**19.3. Training/Operations.** Prior to using NVGs in flight, all aircrew members will complete aircrew NVG ground training and one training flight with an instructor IAW AFI 11-2EC-130J, Volume 1 and established training syllabi.

#### 19.4. Mission Planning.

19.4.1. Weather minimums are IAW this instruction. NVGs have inherent limitations and weather conditions can reduce their effectiveness. Crews must seriously consider moon illumination and position, sky glow at dawn and dusk, cultural lighting, and weapon and expendable effects when planning NVG operations.

19.4.2. The aircraft commander will ensure that sufficient NVGs and NVG equipment are aboard the aircraft. At a minimum, pilots, FSOs, loadmasters and visual scanners will have a set of NVGs. All individuals must perform a thorough preflight of their goggles in a test lane or test set. The aircraft commander will ensure that a spare set of NVGs is preflighted and taken on each flight. Conditions and threat environment or training objectives will dictate when NVGs will be worn and who will wear them.

**NOTE:** All crewmembers will preflight their NVGs prior to flight. Minimum visual acuity is 20/45.

**19.5. NVG Lighting and Required Equipment.** During NVG use, flight deck lighting must be NVG compatible and carefully adjusted. The objective is to have the flight deck instruments visible while minimizing reflection and glare that may interfere with NVG effectiveness. Standard flight deck lighting methods will be established. Ensure all flight deck lights, lip lights, finger lights and flashlights are NVG compatible and do not wash out or degrade the goggles. Additional equipment may be necessary to prepare the aircraft and crewmembers for missions that utilize NVG operations. Equipment which may be required include:

##### 19.5.1. Aircraft NVG Kit.

19.5.1.1. Blackout curtains and porthole covers.

19.5.1.2. NVG-compatible instrument panel floodlights.

19.5.1.3. Tape (olive drab).

19.5.1.4. NVG filters/film (if available)

19.5.1.5. Landing gear handle cover (if available).

19.5.2. Aircrew NVG Kit.

19.5.2.1. NVG-compatible flashlights.

19.5.2.2. Personal lip/finger lights.

19.5.2.3. Chem lights or Krill Lights (as required).

**NOTE:** Non-compatible lights should be masked with olive drab tape or NVG compatible filters/film if available. Lights should be masked with sufficient layers of tape to prevent interference with the NVGs. Tape must be removed after flight to prevent damage to equipment and ensure compatibility for non-NVG flight.

**19.6. NVG Limitations.** Many factors affect NVG operations and degrade the expected acuity. Some factors are:

19.6.1. Any atmospheric condition which absorbs, scatters, or refracts illumination will reduce usable energy available. Clouds, fog, rain, snow, smoke, and haze will all diminish NVG effectiveness.

19.6.2. Bright lights from internal or external sources degrade vision. Flying towards a low angle moon results in problems similar to those experienced when flying towards a low angle sun.

19.6.3. A characteristic of moon position is shadowing. Moonlight creates shadows just as sunlight does. Shadows can hide obstructions such as ridgelines or towers.

19.6.4. Wearing NVGs for an extended period of time can cause fatigue. Periodically breathing 100 percent oxygen and removing the NVGs to rest the eyes can lessen eye fatigue. NVG users must guard against degradation due to prolonged use.

**19.7. NVG Enroute Procedures.** The minimum altitude for flying with NVGs is 1000' AGL. Compute the ESA and MSA as defined by this AFI. If inadvertent IMC conditions are encountered commence an immediate climb to the computed MSA. Also, if either pilot experiences spatial disorientation or an NVG malfunction climb to the computed MSA.

**19.8. NVG Emergency Procedures.** When using NVGs, it is essential that specific crew duties and procedures during aircraft emergencies or RWR threat warning be determined in advance. Details such as who will fly the aircraft, who will transition from NVGs, who will perform emergency actions, what maneuvers will be flown, flight deck lighting, etc., must be planned for and briefed. The non-flying pilot must be ready to immediately take the aircraft if the flying pilot experiences spatial disorientation or an NVG malfunction. Transfer aircraft control if appropriate and transition to a spare set of NVGs. Maintain the computed MSA until the difficulty is overcome.

**19.9. Forms Adopted.** AF Forms 664, **Aircraft Fuels/Ground Servicing Documentation Log**, 711b, **USAF Mishap Report**, 847, **Recommendation for Change of Publication**, 1199, **USAF Restricted Area Badge**, 1297, **Temporary Issue Receipt**, 1994, **Fuels Issue/Defuel Document**, 2282, **Statement of Adverse Effect - Use of Government Facilities**, 3211, **Customer Comments**, 4040, **C-130 Takeoff and Landing Data (TOLD) Card**, 4075, **Aircraft Load Data Worksheet**, AFTO Forms 46, **Pre-positioned Life Support Equipment**, 151A, **Individual C-130 Aircraft Usage Log**, 350, **Repairable Item Processing Tag**, 781, **ARMS Aircrew/Mission Flight Data Document**, 781A, **Maintenance Discrepancy**

**and Work Document, 781H, Aerospace Vehicle Flight Status and Maintenance, AMC Forms 43, Transient Aircrew Facilities Report, 54, Aircraft Commander's Report on Services/Facilities, Customs Forms CF 5129, Crew Member's Declaration, CF 6059B, US Customs Declaration, CF 7507, General Declaration (Outward/Inward), Agriculture, Customs, Immigration and Public Health, Immigration Form I-92, Aircraft/Vessel Report, I-94, Arrival/Departure Record.**

**19.10. Forms Prescribed. AF Form 4138, EC-130 Flight Plan and Navigation Log, 4139, Special Operations C-130 Inflight Refueling Worksheet.**

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**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

Allied Communication Publication (ACP) 160, US Supplement 1

DoDD 1327.5, *Leave and Liberty*

DoDD 5030.49, *DoD Customs Inspection Program*

DoD 4515.13-R, *Air Transportation Eligibility*

DoD 5200.1-R, *Information Security Program*

DoD 5220.22-M, *National Industrial Security Program Operating Manual*

CJCSI 3121.10, *Standing Rules of Engagement of US Forces*

JP 3-10.1, *Joint Tactics, Techniques, and Procedures for Base Defense*

AFPD 11-2, *Aircraft Rules and Procedures*

AFPD 24-4, *Customs and Border Clearance*

AFI 11-202V1, *Aircrew Training*

AFI 11-202V2, *Aircrew Standardization/Evaluation Program*

AFI 11-202V3, *General Flight Rules*

AFI 11-214, *Air Operations Rules and Procedures*

AFI 11-215, *Flight Manuals Program*

AFI 11-401, *Aviation Management*

AFI 13-212 Volume 1, *Ranges Planning and Operations*

AFI 23-202, *Buying Petroleum Products, and Other Supplies and Services Off-Station*

AFI 24-401, *Customs – Europe*

AFI 24-402, *Customs – Pacific*

AFI 24-403, *Customs – Southern*

AFI 24-404, *Customs – Domestic*

AFI 31-401, *Information Security Program Management*

AFI 33-360 Volume 1, *Publications Management Program*

AFI 33-360 Volume 2, *Forms Management Program*

AFI 36-3003, *Military Leave Program*

AFI 91-204, *Safety Investigations and Reports*

AFI 11-2KC-135V3, *Addenda C, KC-135 Special Operations*

AFMAN 10-206, *Operational Reporting*

AFMAN 11-230, *Instrument Procedures*

AFMAN 24-204(I), *Preparing Hazardous Materials for Military Air Shipment*

AFMAN 91-201, *Explosives Safety Standards*

AFPAM 11-216, *Air Navigation*

AFJI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Materials*

AFTTP 3-1 V1, (S) *General Planning and Employment Considerations*, Special Operations Chapter

AFTTP 3-1V2, (S) *Threat Reference Guide and Considerations*

AFTTP 3-1V32, (S) *Tactical Employment, EC-130E/J Commando Solo*

AFSOPAM 91-1, *AFSOC Risk Management Guide*

TO 00-20-1, *Preventive Maintenance Program General Policy Requirements and Procedures*

TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*

TO 00-35D-54, *USAF Material Deficiency Reporting and Investigating System*

TO 1-1C-1, *Basic Flight Crew Air Refueling Manual*

TO 1EC-130J(CS)-1, *Flight Manual EC-130J*

TO 1C-130J-1-1, *Performance Data*

TO 1C-130J-1-4, *Communications/Navigation/Identification-Management System (CNI-MS)*

TO 1C-130J-5-1, *Basic Weight Checklist*

TO 1C-130J-5-2, *Loading Data Manual*

TO 1C-130J-9, *Cargo Loading Manual*

TO 1-1B-40, *Weight and Balance Data*

TO 1-1B-50, *Weight and Balance*

LTM 1-1C-1J-29, *EC-130J Flight Crew Air Refueling Procedures with KC-135 and KC-10*

### ***Abbreviations and Acronyms***

**AAA**—Anti-Aircraft Artillery

**ABD**—Air Base Defense

**ABGD**—Air Base Ground Defense

**AC**—Alternating Current

**ACM**—Additional Crewmember

**ACO**—Airspace Coordination Order

**ADIZ**—Aircraft Identification Zone

**ADS**—Air Delivery System

**AF**—Air Force

**AFI**—Air Force Instruction  
**AFMC**—Air Force Material Command  
**AFMSS**—Air Force Mission Support System  
**AFPD** —Air Force Policy Decision  
**AFSC**—Air Force Specialty Code  
**AFSOC**—Air Force Special Operations Command  
**AG** —Aerial Gunner  
**AGL**—Above Ground Level  
**AI** —Airborne Interceptor  
**AILA**—Automatic Instrument Landing Approach  
**AIMS**—Airlift Implementation and Monitoring System  
**ALCC**—Air Logistic Control Center  
**ALCE**—Airlift Control Element  
**ALTRV** —Altitude Reservation  
**AMC**—Air Mobility Command  
**ANG**—Air National Guard  
**AO**—Area of Operations  
**APC** —Armored Personnel Carrier  
**APOE**—Air-Point of Entry  
**APU**—Auxiliary Power Unit  
**AR**—Air Refueling  
**AR Exit Pt**—Air Refueling Exit Point  
**ARCP** —Air Refueling Control Point  
**ARCT**—Air Refueling Control Time  
**ARIP**—Air Refueling Initial Point  
**ARTCC**—Air Route Traffic Control Center  
**ASHS**—Ammunition Storage and Handling System  
**ASIP**—Aircraft Structural integrity Program  
**ASRR** —Airfield Suitability and Restrictions Report  
**ATC**—Air Traffic Control  
**ATM**—Air Turbine Motor  
**ATO**—Air Tasking Order

**ATOC**—Air Transportation Operations Center  
**BAI** —Back-up Aircraft Inventory  
**BDA**—Battle Damage Assessment  
**BRNAV**—Basic Area Navigation  
**C**—Celsius (degrees)  
**C2**—Command and Control  
**C3** —Command, Control, and Communications  
**CAPA**—Combat Aircraft Parking Area  
**CARF**—Central Altitude Reservation Function  
**CAS**—Close Air Support  
**CB**—Cumulonimbus  
**CC** —Commander  
**CCT** —Combat Control Team  
**CDT**—Crew Duty Time  
**CEOI**—Command Electronic Order of Information  
**CEP**—Circular Error of Probability  
**CFP**—Computer Flight plan  
**CHOP**—Change in Operational Control  
**CHUM**—Chart Updating Manual  
**CIP**—Computed Impact Point  
**CIRVIS**—Communications Instructions Reporting Vital Intelligence Systems  
**CMDU**—Color Multi-function Display Unit  
**COMAFSOF**—Commander Air Force Special Operations Forces  
**COMSEC** —Communications Security  
**CONUS**—Continental United States  
**CP**—Co-pilot  
**CRC**—Crew Rest Compartment  
**CS**—Commando Solo  
**CTA**—Control Area  
**CVR** —Cockpit Voice Recorder  
**DC**—Direct Current  
**DF**—Direction Finding

**DFA**—Detection Free Altitude  
**DH**—Decision Height  
**DIP**—Diplomatic Clearance  
**DoD**—Department of Defense  
**DOT** —Department of Transportation  
**DOV**—Standardization/Evaluation  
**DR**—Dead Reckoning  
**DSN**—Defense Switching Network  
**DSO**—Direct Support Officer  
**DSR**—Deployed Status Report  
**DTA**—Dual Target Attack  
**DV**—Distinguished Visitor  
**EAR**—End Air Refueling  
**ECM** —Electronic Counter Measures  
**EGI**—Embedded GPS / INS System  
**ELT**—Emergency Locator Transmitter  
**EMCON** —Emission Control  
**EMI**—Electro-magnetic Interference  
**EOD**—Explosive Ordnance Disposal  
**EP** —Emergency Procedure  
**EPRIB**—Emergency Position Indicating Radio Beacon  
**ER** —Exceptional Release  
**ERCC** —Engine Running Crew Change  
**ERO**—Engines Running Onload/Offload  
**ESA**—Emergency Safe Altitude  
**ETA**—Estimated Time of Arrival  
**ETD**—Estimated Time of Departure  
**ETE**—Estimated Time Enroute  
**ETP**—Equal Time Point  
**EWO**—Electronic Warfare Officer  
**F** —Fahrenheit (degrees)  
**FAA**—Federal Aviation Administration

**FCF**—Functional Check Flight  
**FCG**—Foreign Clearance Guide  
**FCIF**—Flight Crew Information File  
**FDP**—Flight Duty Period  
**FIH**—Flight Information Handbook  
**FIR**—Flight Information Region  
**FL**—Flight Level  
**FLIP**—Flight Information Publication  
**FOD**—Foreign Object Damage  
**FS**—Flight Station  
**FSAF**—First Suitable Airfield  
**FSO**—Flight Systems Officer  
**FTT**—Fixed Target Track  
**FXD**—Fixed  
**GCAS**—Ground Collision Avoidance System  
**GCCS**—Global Command and Control Station  
**GCI**—Ground Control Intercept  
**GDSS**—Global Decision Support System  
**GMT**—Greenwich Mean Time  
**GPS**—Global Positioning System  
**GS**—Groundspeed  
**HAA**—Height Above Aerodrome  
**HAT**—Height Above Touchdown  
**HDD**—Heads-down Display  
**HERP**—Hostile Environment Repair Procedures  
**HF**—High Frequency  
**HQ**—Headquarters  
**HTWA**—Horizontal Trailing Wire Antenna  
**HUD**—Heads-up Display  
**IAF**—Initial Approach Fix  
**IAW**—In Accordance With  
**ICAO**—International Civil Aviation Organization

**IDS** —Independent Disconnect System

**IFF/SIF**—Identification Friend or Foe/Selective Identification Feature

**IFR**—Instrument Flight Rules

**ILS**—Instrument Landing System

**IMC**—Instrument Meteorological Conditions

**INS** —Inertial Navigation System

**IP**—Initial Point

**IR**—Infrared

**IRCM**—Infrared Counter Measures

**ITO**—Integrated Tasking Order

**JMEM**—Joint Munitions Effectiveness Manual

**KIAS**—Knots Indicated Airspeed

**LLTV**—Low Light Level Television

**LM**—Loadmaster

**LNO**—Liaison Officer

**LOC**—Line of Communication

**LOP**—Line of Position

**LPU**—Life Preserver underarm

**LSAF** —Last Suitable Airfield

**LSDZ** —Laser Surface Danger Zone

**LTM**—Lockheed Technical Manual

**LUT**—Local User Terminal

**LZ** —Landing Zone

**MAN**—Manual

**MARSA**—Military Assumes Responsibility for Separation of Aircraft

**MC**—Mission Computer

**MCC**—Mission Control Center

**MDA**—Minimum Descent Altitude

**MDGT**—Mission Data Ground Terminal

**MDS**—Mission Design Series

**MEGP**—Mission Essential Ground Personnel

**MFD**—Multi-Function Display

**MFOV**—Medium Field of View  
**MM**—Millimeter  
**MNPS**—Minimum Navigation Performance Specifications  
**MPP**—Most Probable Position  
**MSA** —Minimum Safe Altitude  
**MSL**—Mean Sea Level  
**MSO** —Mission Systems Officer  
**MTI**—Moving Target Indicator  
**NACO**—National Aeronautical Charting Organization  
**NAI**—Named Area of Interest  
**NC** —Non-Current  
**NET**—No Earlier Than  
**NFA**—No-Fire Area  
**NFOV**—Narrow Field of View  
**NGB**—National Guard Bureau  
**NLT**—No Later Than  
**NM**—Nautical Mile  
**NOAA**—National Oceanic and Atmospheric Administration  
**NOPAC**—North Pacific  
**NOTAMS**—Notices to Airmen  
**NVG** —Night Vision Goggle  
**OB**—Order of Battle  
**OCONUS**—Outside Continental United States  
**OFP**—Operational Flight Program  
**OPCON**—Operational Control  
**OPLAN**—Operational Plan  
**OPORD**—Operational Order  
**ORE**—Operational Readiness Exercise  
**ORI**—Operational Readiness Inspection  
**P**—Pilot  
**PA**—Public Address  
**PAR**—Precision Approach Radar

**PDO**—Publishing Distribution Office  
**PFPS**—Portable Flight Planning System  
**PGU**—Portable GPS Unit  
**PLOP**—Pressure Line of Position  
**PLS**—Personal Locator System  
**PMSV**—Pilot-to-Metro Service  
**POK**—Passenger Oxygen Kits  
**RCC**—Rescue Coordination Center  
**RCO**—Range Control Officer  
**RCR**—Runway Condition Reading  
**RFA**—Restricted Fire Area  
**RFL**—Restricted Fire Line  
**RNAV**—Area Navigation  
**RNP**—Required Navigation Performance  
**ROE**—Rules of Engagement  
**RON**—Remain Over Night  
**RPM**—Revolutions per Minute  
**RTB** —Return to Base  
**RVR**—Runway Visual Range  
**RVSM**—Reduced Vertical Separation Minima  
**RWR**—Radar Warning Receiver  
**RZCP**—Rendezvous Control Point  
**RZCT**—Rendezvous Control Time  
**RZIP**—Rendezvous Initial Point  
**SAM**—Surface-to-Air Missile  
**SAR**—Search and Rescue  
**SARSAT**—Search and Rescue Satellite  
**SCA** —Self-Contained Approach  
**SEAD**—Suppression of Enemy Air Defenses  
**SEMI**—Semi-automatic  
**SID**—Standard Instrument Departure  
**SITREP**—Situation Report

**SO**—Special Operations  
**SOC**—Special Operations Command  
**SOCCE**—Special Operations Command and Control Element  
**SOCCS**—Special Operations Command and Control Squadron  
**SOFMP** —Special Operations Forces Mission Planning  
**SOW** —Special Operations Wing  
**SPINS**—Special Instructions  
**STAR**—Standard Terminal Arrival  
**STS** —Special Tactics Squadron  
**STTO**—Start Engines, Taxi, and Takeoff  
**TO**—Technical Order  
**TACC**—Tanker Airlift Control Cell  
**TAS**—True Airspeed  
**TCAS**—Traffic Alert and Collision Avoidance System  
**TCMD**—Transportation Control and Movement Document  
**TDY** —Temporary Duty  
**TECHSUM**—Technical Summary  
**TERPS**—Terminal Procedures  
**TIC**—Troops in Contact  
**TIT**—Turbine Inlet Temperature  
**TOC**—Top of Climb  
**TOF**—Time of Fall  
**TOLD**—Takeoff and Landing Data  
**TRANSEC**—Transmission Security  
**TRN**—Trainable  
**TOI**—Target of Interest  
**TRP** —Target Reference Points  
**U**—Unqualified  
**UARRSI**—Universal Aerial Refueling Receptacle Slipway Installation  
**UHF** —Ultra-High Frequency  
**USTRANSCOM**—United States Transportation Command  
**USDAO**—United States Defense Attaché Office

**USSOCOM**—United States Special Operations Command

**VFR**—Visual Flight Rules

**VHF** —Very High Frequency

**VMC** —Visual Meteorological Conditions

**VSCL**—Voice Call Sign Listing

**VTWA**—Vertical Trailing Wire Antenna

**WX**—Weather

### *Terms*

**Additional Crew Member (ACM)**—Mobility aircrew members and authorized flight examiners possessing valid aeronautical orders who are authorized to accompany the normal crew complement required for that mission according to [Chapter 3](#) of this AFI

**Aeromedical Evacuation (AE)**—Movement of patients under medical supervision between medical treatment facilities (MTFs) by air transportation.

**Aeromedical Evacuation Coordination Center (AECC)**—A coordination center, within the joint air operations center's airlift coordination cell, which monitors all activities related to aeromedical evacuation (AE) operation execution. It manages the medical aspects of the AE mission and serves as the net control station for AE communications. It coordinates medical requirements with airlift capability, assigns medical missions to the appropriate AE elements, and monitors patient movement activities. Also called AECC.

**Aeromedical Evacuation Crew Member (AECM)**—Qualified Flight Nurses (FN), Aeromedical Evacuation Technicians (AET), performing AE crew duties.

**Aeromedical Evacuation Operations Officer (AEEO)**—Also call AECC. Medical Service Corps (MSC) officer or medical administrative specialist or technician (AFSC 4A0X1) assigned to the AE system to perform duties outlined in applicable Air Force policy directives, instructions, 41-series handbooks, and this AFI.

**Airborne Mission Commander (AMC)**—The designated airborne commander of joint mission elements. Do not confuse with the search and rescue (SAR) Airborne Mission Coordinator.

**Airborne Mission Supervisor (AMS)**—(Senior Scout mission only) The senior ranking crewmember of the Senior Scout mission crew, and focal point for coordination between the mission and flight crews.

**Air Force Satellite Communication (AFSATCOM)**—Satellite communications system capable of 75 bits per second (BPS) record message traffic.

**Air Force Component Commander (AFCC)**—In a unified, sub-unified, or joint task force command, the Air Force commander charged with the overall conduct of Air Force air operations.

**Airlift**—Aircraft is considered to be performing airlift when manifested passengers or cargo are carried.

**Air Mobility Control Center (AMCC)**—Provides global coordination of tanker and airlift for AMC and operationally reports to the AMC TACC. Functions as the AMC agency that manages and directs ground support activities and controls aircraft and aircrews operating AMC strategic missions through overseas locations.

**Air Mobility Element (AME)**—The air mobility element is an extension of the Air Mobility Command Tanker Control Center deployed to a theater when requested by the geographic combatant commander. It coordinates strategic airlift operations with the theater airlift management system and collocates with the air operations center whenever possible. Also called AME.

**Air Refueling (AR)**—Airborne fuel onload by a receiver aircraft.

**Air Refueling Control Point (ARCP)**—The planned geographic point over which the receiver arrives in the precontact position with respect to the assigned tanker.

**Air Refueling Control Time (ARCT)**—The planned time that the receiver and tanker will arrive over the ARCP.

**Air Refueling Initial Point (ARIP)**—A point located upstream from the ARCP (inbound to the ARCP) where the receivers can get a positive fix using the navigational aids available. (Time over ARIP is used to confirm or correct the ETA to the ARCP).

**Air Reserve Component (ARC)**—Refers to Air National Guard and AFRC forces, both Associate and Unit Equipped.

**Air Route Traffic Control Center (ARTCC)**—The principal facility exercising en route control of aircraft operating under instrument flight rules within its area of jurisdiction. Approximately 26 such centers cover the United States and its possessions. Each has a communication capability to adjacent centers.

**Air Tasking Order (ATO)**—In some theaters the ATO is included in an Integrated Tasking Order (ITO) which includes ground and naval tasking.

**Air Traffic Control (ATC)**—A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

**Allowable Cabin Load (ACL)**—The maximum payload that can be carried on an individual sortie. Also called ACL.

**ALTRV**—

**AN/AAR-47**—Detects missile exhaust plumes, issues alarms and indications when they are detected.

**AN/ALE-47**—Flare and chaff dispensing system which deceives infrared (IR) and radar guided threats.

**AN/ALR-56M Radar Warning Receiver (RWR)**—Provides video and audio alerts to the crew when the system detects threat radar signals.

**Assault Landing Zone (ALZ)**—A paved or semi prepared (unpaved) airfield used to conduct operations in an airfield environment similar to forward operating locations. ALZ runways are typically shorter and more narrow than standard runways.

**Augmented Crew**—Basic aircrew supplemented by additional qualified aircrew members to permit inflight rest periods.

**Basic Area Navigation (BRNAV)**—RNAV with an accuracy equivalent to RNP-5 for operations under IFR in European airspace.

**Bird Aircraft Strike Hazard (BASH)**—An Air Force program designed to reduce the risk of bird strikes.

**Bird Watch Condition Low** - Normal bird activity [as a guide, fewer than 5 large birds ( waterfowl, raptors, gulls, etc.) or fewer than 15 small birds (terns, swallows, etc)] on and above the airfield with a low probability of hazard. Keep in mind a single bird in a critical location may elevate the Bird Watch Condition (BWC) to moderate or severe.

**Bird Watch Condition Moderate**: - Increased bird population (approximately 5 to 15 large birds or 15 to 30 small birds) in locations that represent an increased potential for strike. Keep in mind a single bird in a critical location may elevate the BWC to moderate or severe.

**Bird Watch Condition Severe** - High bird population (as a guide, more than 15 large birds or 30 small birds) in locations that represent an increased potential for strike. A single bird in a critical location may cause a severe BWC.

**Block Time**—Time determined by the scheduling agency responsible for mission accomplishment for the aircraft to arrive at (block in) or depart from (block out) the parking spot.

**Blue Bark**—US military personnel, US citizen civilian employees of the Department of Defense (DoD), and the dependents of both categories who travel in connection with the death of an immediate family member. It also applies to designated escorts for dependents of deceased military members. Furthermore, the term is used to designated property shipment of a deceased member.

**Border Clearance**—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunizations requirements.

**Brevity Code**—Codewords or acronyms used to identify mission elements or execution directions

**Category I Route**—Any route flown outside the operational range of basic navigation services that does not meet the requirements of a CAT II route, to include tactical navigation and overwater routes. Crews should be aware that en route NAVAID outages have the potential for turning any long-range flight into one requiring CAT I Procedures.

**Category II Route**—Any route on which the position of the aircraft can be accurately determined by the overhead crossing of a radio aid (NDB, VOR, TACAN), the intersection of at least two radio aid radials (VOR, TACAN), or one radial (VOR, TACAN) and one DME at least once each hour; with positive course guidance between such radio aids.

**CEOI**—Communications electronics operating instructions.

**Chalk Number**—Number given to a complete load and to the transporting carrier.

**Charge Medical Technician (CMT)**—A qualified AET who supervises other AETs in aircrew positions on an AE mission.

**Circular Error Average (CEA)**—Indicator of the accuracy of an airdrop operation. It is the radius of a circle within which half of the airdropped personnel and items or materiel have fallen.

**Circular Error Record (Individual)**—Maintained for all navigators who are airdrop qualified. See AFI 11-231.

**Coin Assist**—Nickname used to designate dependent spouses accompanying dependent children and dependent parents of military personnel reported missing or captured who may travel space available on military aircraft for humanitarian purposes on approval of the Chief of Staff, United States Army; Chief of Staff, United States Air Force; Chief of Naval Operations; or the Commandant of the Marine Corps.

**Combat Control Team (CCT)**—A small task organized team of Air force parachute and combat diver qualified personnel trained and equipped to rapidly establish and control drop, landing, and extraction zone air traffic in austere or hostile conditions. They survey and establish terminal airheads as well as provide guidance to aircraft for airlift operation. They provide command and control, and conduct reconnaissance, surveillance, and survey assessments of potential objective airfields or assault zones. They also can perform limited weather observations and removal of obstacles or unexploded ordinance with demolitions. Also called CCT.

**Combat Entry Point**—A geographical point inbound to the objective area where the hostile environment is penetrated.

**Combat Exit Point**—A geographical point outbound from the objective area where you exit the hostile environment.

**Combat Offload**—Method by which palletized cargo is offloaded without Materials Handling Equipment (MHE).

**Command and Control (C2)**—The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission. Also called C2.

**Command and Control Center (CC) (C2)**—Each CC provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this AFI, CCs include operations centers, command posts, air mobility elements, tanker airlift control elements (TALCE), air mobility control centers, and tanker task forces.

**Command and Control Center (C3)**—An agency used by a commander to plan, direct, or control operations. Each C3 provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this instruction, C3s include the AFSOC Command Center, AMC Command Center, Command Post (CP), Air Mobility Elements (AME), Airlift Coordination Centers (ACC), Combat Control Teams (CCT), AFRES Headquarters Command Post (AFRES HQ CP), NGB Field Support Center, and ARC wing or group operations centers and command posts.

**Command and Control Information Processing System (C2IPS)**—Computer-based information transmission and information handling for command and control functions associated with the Director of Mobility Forces (DIRMOBFOR), AME fixed units, and TALCE. Interfaces to and automatically updates the Global Decision Support System (GDSS).

**Commander Air Force Special Operations Command (COMAFSOC)**—The Commander of Air Force Special Operations Command.

**Commander Air Force Special Operations Forces (COMAFSOF)**—The commander designated by the commander of USSOC for CONUS deployments or by theater SOC/CCs for overseas deployments, who is responsible for management of Air Force Special Operations Forces (AFSOF) within a theater, a geographic area, or a designated operation. The COMAFSOF is responsible to the commander of USSOC for management of CONUS-deployed AFSOF or to the respective SOC/CC for management of AFSOF theater-assigned AFSOF and is responsible to COMAFSOC for monitoring and management of AFSOF operating within the specific area of responsibility.

**Conference SKYHOOK**—Communication conference available to help aircrews solve inflight problems that require additional expertise.

**Contingency Mission**—Mission operated in direct support of an OPORD, OPLAN, disaster, or emergency.

**Cookie cutter distances**—The maximum effective range of a specific threat, without taking into account the altitude capabilities or effects of terrain masking.

**CREW DEFINITIONS:—**

**Air Crew (EC-130J)**—Includes all flight and mission crewmembers required to employ the EC-130J mission.

**Flight Crew (EC-130J)**—Consists of the pilot, copilot, flight systems officer (FSO), and loadmaster

**Mission Crew (EC-130J)**—Consists of the Commando Solo Missions Systems Officer (MSO) and Electronics Communications System operators (ECS), or mission crewmembers/specialists on EC-130 Super J supported missions.

**Critical Phase Of Flight**—Takeoff, low level (below MSA), airdrop, approach, and landing.

**Corridor**—A real or imaginary barrier defining the outer maneuvering limits for a flight plan leg.

**D-Day**—The day mission operations commence.

**Deadhead Time**—Duty time for crewmembers positioning or de-positioning for a mission or mission support function and not performing crew duties.

**Designated Courier**—Officer or enlisted member in the grade of E-5 or above of the US Armed Forces, or a Department of State diplomatic courier, selected by the Defense Courier Service (DCS) to accept, safeguard, and deliver DCS material as directed. A primary aircrew member should be used as a courier only as a last resort.

**Desolate Terrain Missions**—Any mission in excess of one hour over desert, tropical, or jungle terrain (not to include flights conducted over the CONUS).

**Detection Free Altitude (DFA)**—The maximum altitude, which will provide terrain masking from all known or suspected radar, IR and optical guided threats along each route segment.

**Deviation**—A deviation occurs when takeoff time is not within -20/+14 minutes of scheduled takeoff time.

**Direct Instructor Supervision**—Supervision by an instructor of like specialty with immediate access to controls (for pilots, the instructor must occupy either the pilot or copilot seat).

**Director, Mobility Forces (DIRMOBFOR)**—In overseas theaters, the DIRMOBFOR is normally responsible for theater mobility force management. The Air Force component commander exercises operational control of assigned or attached mobility forces through the DIRMOBFOR. The DIRMOBFOR monitors and manages assigned mobility forces operating in theater.

**Distinguished Visitor (DV)**—Passengers, including those of friendly nations, of star or flag rank or equivalent status to include diplomats, cabinet members, members of Congress, and other individuals designated by the DoD due to their mission or position (includes BLUE BARK and COIN ASSIST).

**Double Blocking**—When an aircraft is required to block-in at one parking spot, then move to normal parking for final block-in. The extra time required for double blocking will be taken into account during mission planning/scheduling. To compensate for double blocking on departure, the aircrew "legal for alert time" may be adjusted to provide additional time from aircrew "show time" to departure. When double blocking is required on arrival, the aircrews entry into crew rest will be delayed until postflight duties are complete.

**Due Regard**—Operational situations that do not lend themselves to International Civil Aviation Organization (ICAO) flight procedures, such as military contingencies, classified missions, politically sensitive missions, or training activities. Flight under "Due Regard" obligates the military AC to be his or her own air traffic control (ATC) agency and to separate his or her aircraft from all other air traffic. (See FLIP General Planning, section 7.)

**Electronics Communications System operators (ECS)**—EC-130J Commando Solo mission systems operator crewmembers.

**End Air Refueling (EAR)**—Geographic location where a planned inflight Air Refueling should terminate.

**EEFI**—Essential elements of friendly information.

**Element**—A subdivision (normally 3 aircraft) flying in formation.

**Emergency Egress Point (EEP)**—A navigation checkpoint on the planned egress route and outside the lethal range of all enemy threat systems.

**Emergency Safe Altitude (ESA)**—An altitude computed by adding 1,000 feet (2,000 feet in mountainous terrain) to the highest elevation/obstacle within 22 NM of centerline or planned flight path, whichever is greater, and rounded up to the next 100 - foot increment. ESA provides a safe altitude, which ensures terrain clearance. A single ESA will be established for the entire route when there are no significant changes in topography. For routes where the terrain does vary significantly, a separate ESA may be established for route segments with similar terrain or obstacle elevations.

**WARNING:** Operation under VFR clearance in IMC conditions is an emergency procedure during training/ exercise operations, requiring appropriate IFF and radio calls to the area air traffic control agency. During contingency/combat missions, the necessity of flying "comm-out" in IMC must be weighed against terrain clearance capability and increased mid-air potential.

**Equal Time Point (ETP)**—Point along a route at which an aircraft may either proceed to destination or first suitable airport or return to departure base or last suitable airport in the same amount of time based on all engines operating. (see [Chapter 11](#))

**Estimated Time In Commission (ETIC)**—Estimated time required to complete required maintenance.

**Execution**—Command-level approval for initiation of a mission or portion thereof after due consideration of all pertinent factors. Execution authority is restricted to designated command authority.

**Execution Checklist**—A chronological listing of key employment/deployment events provided by the user to monitor mission progress.

**Familiar Field**—An airport in the local flying area at which unit assigned aircraft routinely perform transition training. Each operations group commander will designate familiar fields within their local flying area.

**Firm Scheduled Return Time (FSRT)**—Scheduling tool used by air mobility units to predict when crews will return to home station. FSRT for active duty, ANG, and AFRC is defined as SRT plus 24 hours.

**First Suitable Airfield (FSAF)**—The first suitable airfield available after completing the Category I route segment.

**Fix**—A position determined from terrestrial, electronic, or astronomical data.

**Flight Systems Officer (FSO)**—The third flight deck crewmember on the EC-130J. Performs tasks associated with aircraft defense (EW), navigation, inflight refueling, and situational awareness.

**Forced Rendezvous Point (FRP)**—Navigational checkpoint over which formations of aircraft join and become part of the main force.

**Forward Operating Base (FOB)**—An airfield without full support facilities used during mission operations for an undetermined and sometimes extended period of time.

**Global Decision Support System (GDSS)**—AMC's primary execution command and control system. GDSS is used to manage the execution of AMC airlift and tanker missions.

**Global Patient Movement Requirements Center (GPMRC)**—A joint activity reporting directly to the Commander in Chief, US Transportation Command, the Department of Defense single manager for the regulation of movement of uniformed services patients. The Global Patient Movement Requirements Center authorizes transfers to medical treatment facilities of the Military Departments or the Department of Veterans Affairs and coordinates intertheater and inside continental United States patient movement requirements with the appropriate transportation component commands of US Transportation Command.

**Ground Collision Avoidance System (GCAS)**—GCAS provides paired aural and visual warnings to advise of impending flight into terrain or water. These warnings are prioritized into various warning labels.

**Ground Time**—Interval between engine shut down (or arrival in the blocks if engine shutdown is not scheduled) and next takeoff time.

**HAVE QUICK**—Nonsecure, jam-resistant UHF radio system.

**Hazardous Cargo or Materials (HAZMAT)**—Articles or substances that are capable of posing significant risk to health, safety, or property when transported by air and classified as explosive (class 1), compressed gas (class 2), flammable liquid (class 3), flammable solid (class 4), oxidizer and organic peroxide (class 5), poison and infectious substances (class 6), radioactive material (class 7), corrosive material (class 8), or miscellaneous dangerous goods (class 9). Classes may be subdivided into divisions to further identify hazard (i.e., 1.1, 2.3, 6.1, etc.).

**H-Hour**—The specific hour on D-Day on which hostilities commence. When used in conjunction with planned operations, it is the specific hour on which the operation commences.

**Highest Terrain or Obstacle (HTO)**—The highest terrain or obstacle for a flight plan leg or leg segment.

**Hung Ordnance**—Any ordnance or stores that fail to release, jettison, or fire and cannot be removed from the weapon prior to landing (ALE-47 chaff or flare squibs that fail to fire are not considered hung ordnance).

**Inert Ordnance**—Ordnance with the explosive or incendiary material removed or ordnance designed for training.

**Initial Point (IP)**—A point near drop zones or landing zones over which final course alterations are made to arrive at the specified zone.

**In-Place Time (IPT)**—Time when an aircraft and crew are at an operating base and prepared to load for the mission.

**Instructor Supervision**—Supervision by an instructor of like specialty (see also Direct Instructor Supervision).

**Interfly**—The exchange and/or substitution of aircrew members and/or aircraft from or between AFSOC, AFMC, AETC, ACC, PACAF, USAFE ,AMC, ANG and AFRC.

**Joint Airborne/Air Transportability Training (JA/ATT)**—Continuation and proficiency combat airlift training conducted in support of DoD agencies. Includes aircraft load training and service school support. HQ AMC publishes JA/ATT tasking in AMC OPORD 17-76, annex C, appendix 1.

**Joint Operations Commander (JOC)**—The designated operational commander of all assets committed to one particular joint operation.

**Joint Special Operations Task Force (JSOTF)**—A joint task force composed of special operations units from more than one Service, formed to carry out a specific special operation or prosecute special operations in support of a theater campaign or other operations. The joint special operations task force may have conventional non-special operations units assigned or attached to support the conduct of specific missions.

**Jumpmaster**—The assigned airborne-qualified individual who controls parachutists from the time they enter the aircraft until they exit.

**Knock-it-Off**—A term any crew member may call to terminate a training maneuver. Upon hearing “knock-it-off” the crew should establish a safe attitude, altitude and airspeed and return the aircraft power and flight controls to a normal configuration.

**KY-58**—Secure speech system (VINSON) associated with the FM, UHF, VHF, and satellite communications (SATCOM) systems.

**KYV-5**—Secure speech system associated with narrow-band HF radio.

**Last Suitable Airfield (LSAF)**—The last suitable airfield available before beginning the Category I route segment.

**Latest Descent Point**—Latest planned point on the DZ run-in course where the formation plans to initiate descent to drop altitude. This is planned to ensure all aircraft in the formation are stabilized (on altitude and airspeed) prior to the drop.

**L-Band SATCOM**—600 BPS satellite communications (SATCOM) system contracted through the International Maritime Satellite Organization (INMARSAT), used primarily for command and control. The system consists of a satellite transceiver, a laptop computer, and a printer.

**Lead Crew**—A crew consisting of a lead qualified aircraft commander.

**L-Hour**—The time of landing of the first wave of assault aircraft.

**Line of Communication (LOC)**—Any road, river, power line, etc., which has the probability of being traveled along or monitored by hostile forces.

**Live Ordnance**—Combat type ordnance incorporating explosive or incendiary material to include flares.

**Load Message**—An operational immediate message electronically transmitted from departure station listing pertinent traffic and operational data.

**Loading Time**—In airlift operations, a specified tie, established jointly by the airlift and airborne commanders concerned, when aircraft and loads are available and loading is to begin.

**Local Training Mission**—A mission scheduled to originate and terminate at home station (or an off-station training mission), generated for training or evaluation and executed at the local level.

**Lowest Acceptable Altitude (LAA)**—The lowest altitude that a specific crew and specifically configured aircraft may fly.

**Low Level**—Operations, other than landings, approaches, and transitions, conducted below 1,000 feet above ground level.

**Maintenance Codes:—**

Fully Mission Capable (FMC).

Partially Mission Capable (PMC).

Not Mission Capable (NMC).

M suffix (Maintenance).

S suffix (Supply).

B suffix (Both).

**Maintenance Status:—**

**A-1**—No maintenance required.

**A-2 (Plus Noun)**—Minor maintenance required, but not serious enough to cause delay. Add nouns that identify the affected units or systems, i.e. hydraulic, ultra high frequency (UHF) radio, radar, engine, fuel control, generator, etc. Attempt to describe the nature of the system malfunction to the extent that appropriate maintenance personnel will be available to meet the aircraft. When possible, identify system as mission essential (ME) or mission contributing (MC).

**A-3 (Plus Noun)**—Major maintenance. Delay is anticipated. Affected units or systems are to be identified as in A-2 status above.

**A-4**—Aircraft or system has suspected or known biological, chemical, or radiological contamination.

**Medical Crew Director (MCD)**—A qualified Flight Nurse (FN) responsible for supervising patient care and AECMs assigned to AE missions. On missions where an FN is not onboard, the senior AET will function as MCD.

**Military Authority Assumes Responsibility for Separation of Aircraft (MARSA)**—A condition whereby the military services involved assume responsibility for separation between participating aircraft in the air traffic control (ATC) system.

**Minimum Navigation Performance Standard (MNPS)**—A concept adopted by the International Civil Aviation Organization (ICAO) with the objective of ensuring safe separation of aircraft and maximum

benefit from required navigation equipment. Certified aircraft navigation systems must be able to stay within 12.6 NM of track 95 percent of the time.

**Minimum Safe Altitude (MSA)**—MSA is computed at 1,000 feet above HTO within five NM of centerline or planned flight path, whichever is greater, and rounded up to the next 100-foot increment. MSA is an intermediate altitude which will provide terrain clearance yet limit threat detection during situations that require leaving the low altitude structure.

**Mission**—1. The task, together with the purpose, that clearly indicates the action to be taken and the reason therefor. 2. In common usage, especially when applied to lower military units, a duty assigned to an individual or unit; a task. 3. The dispatching of one or more aircraft to accomplish one particular task.

**Mission Advisory**—Message dispatched by command and control agencies, liaison officers, or aircraft commanders advising all interested agencies of any changes in status affecting the mission.

**Mission Contributing (MC)**—Any degraded component, system, or subsystem which is desired, but not essential to mission accomplishment

**Mission Essential (ME)**—An degraded component, system, or subsystem which is essential for safe aircraft operation or mission completion

**Mission Ready**—Crews or crewmembers fully qualified and current to perform the unit mission.

**Missions Systems Officer (MSO)**—A rated officer mission crewmember on the EC-130J Commando Solo aircraft. Performs tasks associated directing the Commando Solo mission and communications related to command and control of the mission.

**Mobility Air Force (MAF)**—Forces assigned to mobility aircraft or MAJCOMs with operational or tactical control of mobility aircraft.

**Modified Contour**—Flight in reference to base altitude above the terrain with momentary deviations above and below the base altitude for terrain depressions and obstructions to permit a smooth flight profile.

**Most Probable Position (MPP)**—An MPP is a position determined with partial reference to a DR position and partial reference to all other fixing aids, weighing each one according to the FSO's judgment and experience.

**Night Vision Goggles (NVG)**—Self-contained, battery-operated devices that amplify light to enhance night vision.

**Noise Sensitive Areas (NSA)**—Areas along training routes identified as having a high number of noise complaints. Avoid designated NSAs by 3 NM or cross no lower than 1500' AGL, or as published.

**Off Station Training Flight**—A training flight that originates or terminates at other than home station that is specifically generated to provide the aircrew experience in operating away from home station. Off station trainers will not be generated solely to transport passengers, cargo, or position/deposition crew members.

**Operational Control (OPCON)**—Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority). Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction

necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization,, or unit training. Also called OPCON.

**Operating Weight**—Basic aircraft weight plus weight of crewmembers, crew baggage, steward's equipment, emergency and extra equipment.

**Operational Control (OPCON)**—Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission.

**Operational Missions**—Missions executed at or above TACC level. Operational missions termed "CLOSE WATCH" include CORONET missions and AFI 11-221, priority 1, 2, and 3 missions tasked by the TACC. Other operational missions such as deployment, re-deployment, reconnaissance operations, operational readiness inspections (ORI), AMC channel or SAAM, and JA/ATT missions may be designated "CLOSE WATCH" as necessary.

**Opportune Airlift**—Transportation of personnel, cargo, or both aboard aircraft with no expenditure of additional flying hours to support the airlift.

**Originating Station**—Base from which an aircraft starts on an assigned mission. May or may not be the home station of the aircraft.

**Operational Risk Management (ORM)**—A logic-based, common sense approach to making calculated decisions on human, materiel, and environmental factors before, during, and after Air Force operations. It enables commanders, functional managers and supervisors to maximize operational capabilities while minimizing risks by applying a simple, systematic process appropriate for all personnel and Air Force functions.

**Overwater Flight**—Any flight that exceeds power off gliding distance from land.

#### **Patient Movement Categories—**

**Urgent**—Patients who must be moved immediately to save life, limb, or eyesight, or to prevent complication of a serious illness.

**Priority**—Patients requiring prompt medical care that must be moved within 24 hours.

**Routine**—Patients who should be picked up within 72 hours and moved on routine/scheduled flights.

**Payload**—The combined weight of passengers, baggage, and cargo carried on a mission.

**Permit to Proceed**—Aircraft not cleared at the first US port of entry may move to another US airport on a permit to proceed issued by customs officials at the first port of entry. This permit lists the requirements to be met at the next point of landing, i.e. number of crew and passengers, cargo not yet cleared. Aircraft

commanders are responsible to deliver the permit to proceed to the customs inspector at the base where final clearance is performed. (Heavy monetary fines can be imposed on the aircraft commander for not complying with permit to proceed procedures.)

**Point Of No Return**—A point along an aircraft track beyond which its endurance will not permit return to its own or some other associated base on its own fuel supply.

**Point of Safe Return**—Most distant point along the planned route from which an aircraft may safely return to its point of departure or alternate airport with required fuel reserve.

**Popeye**—In air intercept, a code meaning, “In clouds or area of reduced visibility.” In gunship air-to-surface, a code meaning a visual sensor is no longer able to track the target due to clouds or area of reduced visibility.

**Positioning and De-Positioning Missions**—Positioning missions are performed to relocate aircraft for the purpose of conducting a mission. De-positioning missions are made to return aircraft from bases at which missions have terminated.

**Quick Stop**—Set of procedures designed to expedite the movement of selected missions by reducing ground times at enroute or turnaround stations.

**Quick Turn**—A set of procedures designed to expedite the movement of selected missions by reducing ground times at en route or turnaround stations.

**Ramp Coordinator**—Designated representative of the C2 whose primary duty is the coordination of ground handling activities on the ramp during large scale operations.

**Reduced Vertical Separation Minima (RVSM)**—

**Reference Heading**—The magnetic course between two waypoints used to aid in dead reckoning during significant turns on tactical flights.

**Rendezvous**—A procedure to join-up two or more aircraft in aerial flight.

**Rendezvous Control Time (RZCT)**—A general term that applies to any control time utilized for accomplishing a rendezvous between tanker and receiver at a specific point (i.e. at the ARCP, RZ, RZIP, etc.).

**Rendezvous Initial Point (RZIP)**—A planned geographical point prior to the ARCP at which join-up is initiated during an enroute rendezvous.

**Required Navigation Performance (RNP)**—RNP is a statement of the navigation performance accuracy necessary for operation within a defined airspace. Additional requirements beyond accuracy may apply to each RNP type.

**Rules of Engagement (ROE)**—Directives issued by competent military authority which delineate the circumstances and limitations under which US forces will initiate, continue, and/or terminate combat engagements with other forces.

**Scheduled Return Date (SRD)**—Scheduling tool used by air mobility units to predict when crews will return to home station. It allows force managers to plan aircrew availability and provide crews visibility over monthly flying activities. AMC and AMC-gained aircrews (except those on standby at home station) will have an SRT established on their flight orders.

**Scheduled Takeoff Time**—Takeoff time is established in the schedule or OPORD. For air aborts and diversions, this will be engine shut down time (or arrival in the blocks if engine shutdown is not scheduled) plus authorized ground time. Early deviation does not apply to aborts or diversions unless the mission is formally rescheduled by current operations.

**Section**—Subdivision of a formation. A section normally consists of 6 aircraft (2 elements).

**Self-Contained Approach (SCA)**—An approach conducted using self-contained, onboard navigation systems.

**Serial**—Normally consists of 12 aircraft (2 sections or 4 elements).

**Significant Meteorological Information (SIGMET)**—Area weather advisory issued by an ICAO meteorological office relayed to and broadcast by the applicable ATC agency. SIGMET advisories are issued for tornadoes, lines of thunderstorms, embedded thunderstorms, large hail, severe and extreme turbulence, severe icing, and widespread dust or sand storms. SIGMETs frequently cover a large geographical area and vertical thickness. They are prepared for general aviation and may not consider aircraft type or capability.

**Special Assignment Airlift Mission (SAAM)**—Funded airlift that cannot be supported by channel missions because of the unusual nature, sensitivity, or urgency of the cargo, or that requires operations to points other than the established channel structure.

**Special Instructions (SPINS)**—Associated with the ATO. Provides detailed, non mission specific information on general operating procedures in the theater.

**Special Tactics Squadron (STS)**—Air Force special operations combat control and pararescue forces.

**Special Tactics Team (STT)**—An Air Force team composed primarily of special operations combat control and pararescue personnel. The team supports joint special operations by selecting, surveying, and establishing assault zones; providing assault zone terminal guidance and air traffic control; conducting direct action missions; providing medical care and evacuation; and coordinating, planning, and conducting air, ground, and naval fire support operations personnel organized, trained, and equipped to establish and operate navigational or terminal guidance aids, communications, and aircraft control facilities in support of combat aerial delivery operations.

**Standby Force, Aircraft, or Crews**—Designated aircraft and crews capable of being launched in less than the normal alert-to-takeoff time period.

**Station Time**—In air transport operations, the time at which crews, passengers, and cargo are to be on board and ready for the flight.

**Suitable Airfield**—Normally, suitable airfields are those which meet C-130 weather, fuel, and runway requirements ([Chapter 6](#)) and are within 50 NM of flight plan course centerline.

**Supplemental Training Mission (STM)**—Opportune airlift of cargo and mission personnel may be accomplished as a by-product of crew training missions. STMs may be authorized when minor adjustments can be made to a scheduled training mission or when a productive aircrew training mission can be generated for the airlift. The training mission will not be degraded in any manner to accomplish the STM. Use of STMs for logistical support will be authorized only when normal military or commercial transportation modes are unable to provide required support. STMs may be approved by the operations group commander. On STMs aircraft commanders will release maximum number of space available seats commensurate with mission requirements and safety.

**Supported Forces**—Space-required passengers consisting of US and foreign military members who are on board an AFSOC aircraft as an integral part of the mission being performed.

**Supporting Forces**—Space-required passengers consisting of US and foreign military members, DoD civilians, and US civilian employees under contract to the DoD, who directly support the mission or deployment of an AFSOC unit.

**Tactical Altitude**—A general description for altitude on those flights where the cruising altitude is at or below the ESA

**Tactical Control (TACON)**—Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned. Tactical is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command.

**Tactical Event**—Low altitude operations, and threat avoidance approaches/departures.

**Tanker Airlift Control Center (TACC)**—The Air Mobility Command direct reporting unit responsible for tasking and controlling operational missions for all activities involving forces supporting US Transportation Command's global air mobility mission. The Tanker Airlift Control Center is comprised of the following functions: current operations, command and control, logistics operations, aerial port operations, aeromedical evacuation, flight planning, diplomatic clearances, weather, and intelligence. Also call TACC.

**Tanker Airlift Control Element (TALCE)**—Team of qualified Air Force personnel established to control, coordinate, and function as an Air Force tanker and airlift C2 facility at a base where normal AMC C2 facilities are not established or require augmentation. TALCEs support and control contingency operations on both a planned and no-notice basis.

**Terminal Fuel Flow (TFF)**—The fuel flow rate expected during the last hour at cruise altitude. It is the difference between the fuel required for enroute time plus one hour and fuel required for enroute time. TFF may also be computed using the T.O. 1C-130J-1-1 fuel flow table and the estimated aircraft weight at destination. Estimated gross weight is determined by subtracting fuel burn off from takeoff gross weight.

**Theater Patient Movement Requirements Center (TPMRC)**—Responsible for the coordination and requirements for patient movement from communication zone (COMMZ) to CONUS.

**Terrain Masking**—Using the terrain to avoid radar, IR or visual detection. Direct terrain masking is maneuvering the aircraft to place the terrain between you and the threat. Indirect terrain masking is having the aircraft so close to the terrain that it is very difficult to distinguish the aircraft from the background. Indirect terrain masking is ineffective against pulsed Doppler radar or moving target indicator equipped threats.

**Time Out**—Common assertive statement used to voice crewmember concern when safety may be jeopardized.

**Time Over Target (TOT)**—The actual time an aircraft is at a geographic point or area carrying out an assigned mission.

**Traffic Alert and Collision Avoidance System (TCAS)**—An airborne collision avoidance system based on radar beacon signals which operates independently of ground based equipment.

**Training Mission**—Mission executed at the unit level for the sole purpose of aircrew training for upgrade or proficiency. Does not include operational missions as defined in this AFI.

**Transportation Working Capital Fund (TWCF)**—Formerly known as Defense Business Operations Fund-Transportation (DBOF-T). TWCF is part of the Air Force Working Capital Fund (AFWCF). Normally, TWCF funds are used for costs that can be recovered from an air mobility customer. Examples include: TDY costs, site surveys of TALCE or airlift unit deployment beddown locations, airlift unit level mission planning expenses, and support or contract costs for deployed TWCF units/personnel.

**Unilateral**—Operations confined to a single service.

**Unit Move**—A mission airlifting military passengers or troops who originate from the same unit and onload point, are under the control of a designated troop commander and offload at the same destination.

**Zero Fuel Weight**—Weight, expressed in pounds, of a loaded aircraft not including wing and body tank fuel. All weight in excess of the maximum zero fuel weight will consist of usable fuel.

**Zero Fuel Weight (Maximum)**—That weight expressed in pounds where an addition to the aircraft gross weight can be made only by adding fuel in wing tanks. This value is referred to as "Limiting Wing Fuel."